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ABSTRACT

This guide is intended to be used as a model to develop Career Education Experiences in a classroom program. It includes eight sample learning modules for the primary grade level (K-3) and another eight for the intermediate grade level (4-6). Each module has three basic parts: instructional information, instructional activities, and culmination or evaluation activities. The instructional information contains the career development concepts which are developed for that module, the subject matter which is needed to carry through the activities, occupational information, and pupil performances objectives aimed primarily at the career development concepts. Other elements of the guide include a listing of occupational cluster definitions, areas for investigation, career development concept matrix and an articulation plan for occupational study and types of learning resources. (Author)

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CAREER AWARENESS

IN

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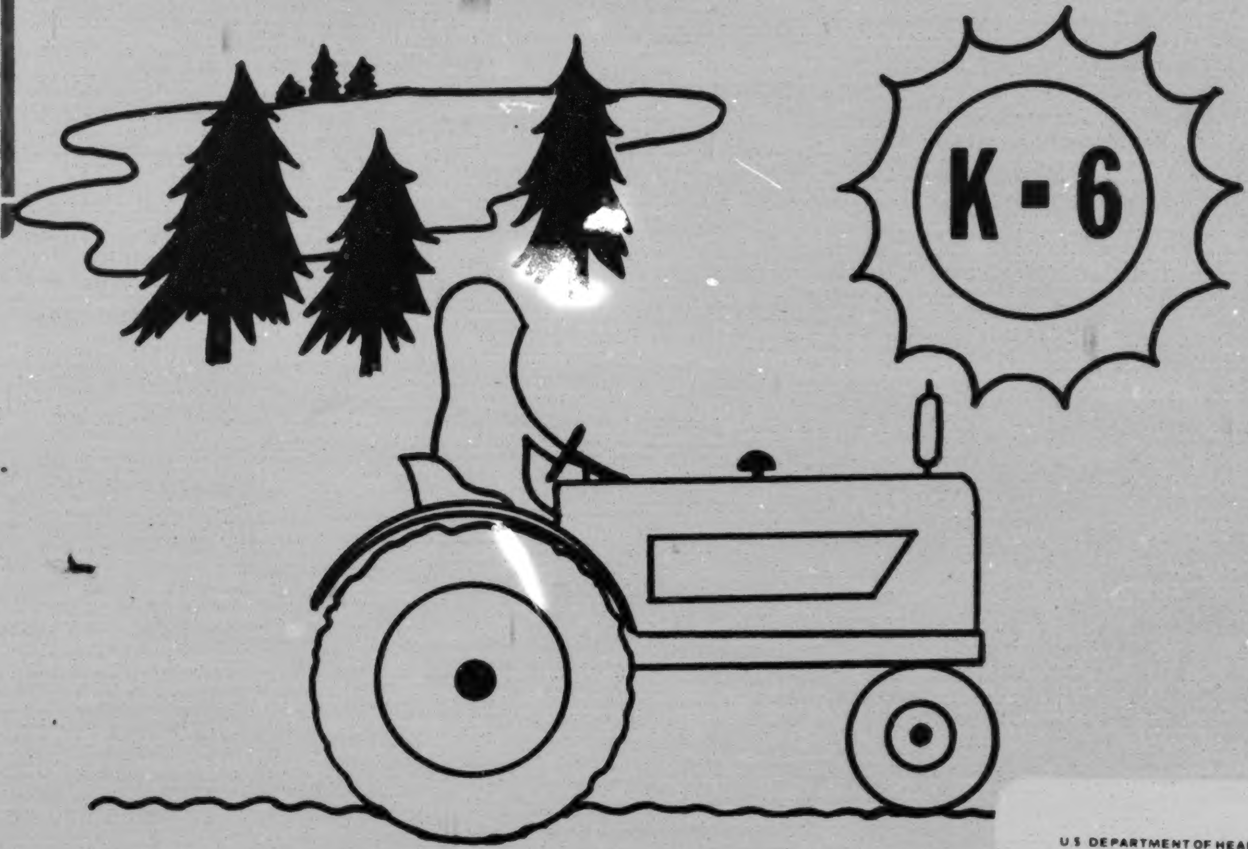
AGRIBUSINESS, RENEWABLE NATURAL RESOURCES, AND ENVIRONMENTAL PROTECTION:

A CURRICULUM GUIDE FOR GRADES K-6



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OTHER CURRICULUM MATERIALS DEVELOPED BY THIS PROJECT INCLUDE

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CAREER PREPARATION IN AGRICULTURAL PRODUCTION: A CURRICULUM GUIDE FOR HIGH SCHOOL VOCATIONAL AGRICULTURE.

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CAREER PREPARATION IN AGRICULTURAL EQUIPMENT AND MECHANICS: A CURRICULUM GUIDE FOR HIGH SCHOOL VOCATIONAL AGRICULTURE.

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CAREER PREPARATION IN ENVIRONMENTAL PROTECTION: A CURRICULUM GUIDE FOR HIGH SCHOOL VOCATIONAL AGRICULTURE.

CAREER AWARENESS IN AGRIBUSINESS, RENEWABLE NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION

A CURRICULUM GUIDE FOR GRADES K-6

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1974

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OVERVIEW

In June, 1973, the Center for Educational Studies, School of Education, Eastern Illinois University, Charleston, Illinois, was awarded a twelve-month subcontract from the Ohio Career Education and Curriculum Management Laboratory in Agricultural Education, The Ohio State University, Columbus, Ohio. The prime contract came from the Curriculum Center for Occupational and Adult Education Bureau of Adult, Vocational and Technical Education, the United States Office of Education.

The purpose of this subcontract was

1. To DEVELOP two career education curriculum guides in the areas of Agribusiness, Renewable Natural Resources, and Environmental Protection.
   a. One for the CAREER AWARENESS STAGE (K-6)
   b. One for the CAREER EXPLORATION STAGE (7-9)
2. To EVALUATE the guides by field testing.

These curriculum guides were prepared to create an awareness of agricultural occupations as well as to develop career development concepts. They are a part of a comprehensive project to develop ten articulated curriculum guides -- one K-6 guide on the career awareness level, one 7-9 guide for the career exploration level, and eight 10-12 guides on the preparation level. With the assistance of Mr. Roger Roediger, the prime contract director, the agricultural concepts and occupations were selected and developed for these guides. Dr. Marla Peterson, director of the Enrichment of Teacher and Counselor Competencies in Career Education Project at Eastern Illinois University, and consultant to this project, provided the Career Development Concepts which were developed in each module.

Dr. Charles Joley, of the Center of Educational Studies, Eastern Illinois University, Charleston, Illinois, served as on-site monitor and the late Dr. Philip Teske of The United States Office of Education served as monitor from that office.

The staff and consultants of this Career Education Curriculum Development Project worked very diligently to fuse the agricultural occupational information and the career development concepts with suitable grade level subject matter so that a module of learning experiences would emerge which should not only broaden the child's occupational horizons, but also [illegible]er his career development.

Dorothy Lawson
Project Director

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CAREER EDUCATION -- THE STEP BEYOND

A basic purpose of American education is the preparation of people for living and, within that context, preparation of people for a career. Career Education is the development of attitudes and appreciations toward workers and the benefits each worker receives and gives as a contributing member of society. Career Education can be the focal point for developing an educational awareness of the use of skills and knowledge taught in the schools and used by adults in the working world. Career Education can be the center of the curriculum which joins school, family, and community into a joint effort of educating the young. Career Education is concerned with the total development of a student. This means providing experiences for students to conceptualize the career development concepts which should be introduced to preschoolers and developed through high school.

Career development, which is a lifelong process, begins at a very early age when the child role plays various occupations in his play. He begins very early to establish his view of work and a view of himself as a worker. Career development proceeds much the same way as emotional, social, intellectual and physical development progress. Before one is ready for the next level, certain concepts must be conceptualized. The child goes through the following stages. The AWARENESS STAGE, which covers the preschool period through grade six, is a period when the child not only becomes aware of himself and other people physically, emotionally, and socially, but he also gains intellectual skills and knowledge. While in this stage, the child becomes interested in what adults do. He is interested in knowing how he gets the goods and services which he enjoys. He also enjoys "putting on occupational roles" by role playing the many occupations with which he has become acquainted. The EXPLORATION STAGE, which usually covers the middle or junior high school age level, is a time for some actual exploring of a variety of occupations. It is a time of self-assessment and of consideration of the various types of careers available to the individual. The student should, by this time, be able to identify who he is and what his interests and abilities are, to make decisions and be prepared to adjust and change those decisions, to formulate some preferences for particular occupations, and to identify various lifestyles he may wish to pursue. A tentative decision may be made by grade nine in order to begin the PREPARATION STAGE. This stage will last as long as necessary for the acquisition of skills and knowledge needed to enter and progress through one's occupational career.

The student has difficulty in making a critical career choice when he has not been provided visible "world of work" experiences, has not been involved in the decision-making process, or has not participated in any work experiences associated with his career choice.

Career Education, then, is the education of the child of today in a manner which will make his life useful and productive in the world he will live in tomorrow. It is preparing the future adult to develop the philosophy that work has value and meaning to the individual and to society. It provides an exposure to a wide variety of possible careers so that the young adult can make a career choice on the basis of his self-knowledge, his particular needs, abilities, interests, and the needs of society.

LOCAL PROGRAM DEVELOPMENT AND IMPLEMENTATION

In order to implement an organized and efficient Career Education program, a great deal of preplanning is needed. This includes establishing guide lines for the development of each segment of the program.

Career Education needs to be introduced as a program of High Priority for the whole educational system. As such, individual time and interest is given more freely, and the program is given the emphasis needed.

An understanding of the career development concepts and objectives need to be developed for all persons involved in the program planning and implementation. It is important to conduct a local resource study and then make a usable compilation of that data. This resource file should include human resources, as well as printed and audio-video materials, and locations of places available for career education field trips.

The organizing of committees of interested individuals, which should include educators, parents, employers, representatives from public agencies, and elected government officials, is appropriate. The established educational system should be studied and notations made where changes could be made to incorporate the career development concepts and the occupational information. Consideration should be given to the purpose and function of the existing programs and courses.

Objectives should be written for both the teacher and pupil. The curriculum should be planned for the articulation of Career Education throughout the entire K-12 school. In-service training programs need to be designed with adequate time provided for teacher-planning of individual programs. Plans need to be made to implement a pilot program and then, through evaluation, changes can be made for the permanent implementation in the entire school district curriculum. Once the program is ready to be implemented into the system, the classroom teacher plans how she will fit the program into her individual program.

Some ways to implement a program into the classroom are listed here only as alternatives for putting career education into the classroom. Following each method is one consideration which should be dealt with when selecting that particular implementation plan.

1. The career development concepts can be infused into all other subjects. Consideration: The career development concepts would need to be classified as to which ones would be taught in each subject so that all concepts would be developed.

2. All subject matter concepts can be fed into each career development activity. Consideration: Subject matter concepts need to be determined which best fuse with each career development concept.

3. Career education becomes a separate subject. Consideration: The career development concepts are isolated from other educational activities.

4. Career development concepts can be selected to be taught in only certain subject areas such as social studies or language arts. Consideration: The only occupations identified may be those primarily oriented toward one subject, and some concepts can be developed better in other subject matter areas.

5. The nonintegrated plan uses the career development concept whenever and wherever convenient during the school year. Consideration: A thorough command of all career development concepts is needed in order to make use of the teachable moment.

6. Occupational information is the focus of career education activities. Consideration: Career development concepts may be neglected, and educational awareness may not be made apparent.

7. Career development concepts become the central force of the curriculum. All other subjects are fused with career development concepts and all other subject concepts. Consideration: Activities may not include occupational information or experiences.

8. Career development concepts, fused with subject matter, can be taught by using a specific occupation as the organizing force. Consideration: It is possible to provide more educational awareness, community awareness, and awareness of self when the child is exposed to real people in the "world of work."

The modules developed for this curriculum guide have been designed to follow method 8 since it is essential that educational experiences be given each child to aid in his self-development as a potential member of the "world of work."

The following pages provide an articulation plan for providing occupational and career development experiences for K-9 pupils. The K-6 curriculum guide modules were based on student interest in the occupation and on the career development concept which best fit the experiences which could be developed. One primary module and one intermediate module were developed in each of the Agricultural Areas. Each of the 7-9 curriculum guide modules was designed around one of the Agricultural Areas and one major Career Development Concept. The sub-area modules were designed to be used as individualized student activities.

The 10-12 curriculum guides provide the basis for developing vocational courses in each of the major Agribusiness, Renewable Natural Resources, and Environmental Protection areas. All of the curriculum guides developed in this particular project are listed on the inside cover of this curriculum guide. The articulation plan used to present this particular cluster of occupations to the K-12 pupils is important to note at this point. The curriculum developers have articulated the K-12 guides in such a manner that each guide builds upon or enlarges the experiences provided in preceding guides; i.e., the K-6 guide provides an awareness of this cluster of occupations, the 7-9 provides exploration experiences pertaining to this occupational cluster, and the 10-12 guides provide experiences at the preparation level for the acquisition of job entry skills required in this occupational cluster.

K-6 CAREER DEVELOPMENT INFUSED MODULES

CAREER DEVELOPMENT CONCEPTS	PRIMARY GRADE LEVEL				INTERMEDIATE GRADE LEVEL		
	K	1	2	3	4	5	6
COPING BEHAVIOR #1				FOREST TECHNICIAN			FEED SALES PERSONNEL
COPING BEHAVIOR #2		PARK RANGER NATURALIST			CHRISTMAS TREE FARMER		
LIFESTYLE	PEANUT BUTTER MAKER					IRRIGATION ENGINEER	
SELF-DEVELOPMENT #1	ENVIRONMENTAL INSPECTOR				ENVIRONMENTAL TECHNICIAN (noise)		
SELF-DEVELOPMENT #2		AGRONOMIST					DAIRY PROCESSING EQUIPMENT OPERATOR (cheese)
SELF-DEVELOPMENT #3				FARM EQUIPMENT MECHANIC			FISH CULTURIST
DECISION MAKING #1			FLORIST			LIVESTOCK PRODUCER	
DECISION MAKING #2			TRUCK FARMER			GREENSKEEPER	

I. Agricultural Production
   A. Truck Farmer
   B. Livestock Producer

II. Agricultural Supplies and Services
   A. Agronomist
   B. Feed Sales Personnel

III. Agricultural Equipment and Mechanics
   A. Farm Equipment Mechanic
   B. Irrigation Engineer

IV. Agricultural Products (Food Processing)
   A. Peanut Butter Maker
   B. Dairy Processing Equipment Operator (cheese)

V. Ornamental Horticulture
   A. Florist
   B. Greenskeeper

VI. Renewable Natural Resources
   A. Park Ranger Naturalist
   B. Fish Culturist

VII. Forestry
   A. Forest Technician
   B. Christmas Tree Farmer

VIII. Environmental Protection
   A. Environmental Inspector
   B. Environmental Technician (noise)

7-9 CAREER DEVELOPMENT INFUSED MODULES

CAREER DEVELOPMENT CONCEPTS	OCCUPATIONAL SUB-AREA MODULES							AREA
DECISION MAKING #1	Animal Production	Plant Production	Mechanics	Agricultural Business Management				AGRICULTURAL PRODUCTION
COPING BEHAVIORS #2	Feeds	Chemicals	Fertilizers	Seeds				AGRICULTURAL SUPPLIES AND SERVICES
SELF-DEVELOPMENT #2	Power, Machinery, and Tools	Agricultural Structures	Soil and Water Management	Electrification				AGRICULTURAL EQUIPMENT AND MECHANICS
X COPING BEHAVIORS #1	Dairy Processing	Meat Processing	Fruit, Vegetables, and Nuts	Other Products				AGRICULTURAL PRODUCTS (FOOD PROCESSING)
SELF-DEVELOPMENT #1	Arboriculture	Floriculture	Green House Operation & Management	Landscaping	Nursery Operation & Management	Turf Management		ORNAMENTAL HORTICULTURE
LIFESTYLE	Forests	Soil	Wildlife	Water	Fish	Range	Recreational Uses	RENEWABLE NATURAL RESOURCES
SELF-DEVELOPMENT #3	Production & Propagation	Protection	Products & By-Products					FORESTRY
DECISION MAKING #2	Water	Air, Noise, Radiation	Solid Wastes					ENVIRONMENTAL PROTECTION

PURPOSE AND USE OF THIS GUIDE

This guide is intended to be used as a model to develop Career Education experiences in a classroom program. The emphasis of the materials is not only to provide occupational information or provide for the development of attitudes and appreciations, but to provide experiences for using cognitive and psychomotor skills and knowledge in a career development program. This guide has three major goals:

1. Provide a guide for developing a career education curriculum using the *AGRIBUSINESS, RENEWABLE NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION* cluster.

2. Provide sample modules for each grade level which show the fusion of *CAREER DEVELOPMENT CONCEPTS, SUBJECT MATTER,* and *OCCUPATIONAL INFORMATION.*

3. Provide an example for developing awareness or exploration experiences of Agribusiness, Renewable Natural Resources and Environmental Protection occupations.

Because state supervisors, school district curriculum committees, and classroom teachers will be involved in the development of career education curriculums, it was determined that the format used for this curriculum guide should be transportable by those program developers into the state or local level programs. Included in this guide are seven aids which should help in the development of any career education curriculum:

1. A listing of the *CAREER DEVELOPMENT CONCEPTS* is given so that the instructors will know the concepts which are to be developed at a certain stage as well as those preceding and following them. All of the subconcepts are being aimed toward major concepts. These concepts are separated into two dimensions: Developmental and Interacting. Coping Behaviors, Self-Development, Decision Making, and Lifestyle concepts are considered developmental as they can be sequenced into a logical progression for different experience levels. Career Information, Educational Awareness, Attitudes and Appreciations for all levels plus Economic Awareness and Skill Awareness on the junior high school level are considered Interacting Dimensions because these concepts are those which are appropriate for any level.

2. A listing of *GRADE LEVEL SUBJECT MATTER* in the areas of Mathematics, Social Studies, Language Arts and Science identifies those topics used in this guide. This subject matter is used in the development of activities for a particular grade level. Since the learning modules are designed to develop an awareness or exploration of occupations and to develop career concepts, the activities provide reinforcement and extension of skills and knowledge as taught in the elementary or junior high school and as used for occupational competencies.

3. The listing of *OCCUPATIONAL CLUSTER DEFINITIONS, AREAS FOR INVESTIGATION AND OCCUPATIONS* in this cluster is provided to give some broad definitions of the topic to be presented, the kinds of knowledge used by workers in this area, and the various occupations which are classified within this category.

4. The *EXPERIENCE LEVEL, LEARNING MODULE AND CAREER DEVELOPMENT CONCEPT MATRIX* shows the placement of that particular learning module. For example: The FLORIST is written around a decision-making subconcept for children at second experience developmental level. However, it is not necessarily designed to be taught only to second graders. Because of the provision of individual instruction for the child on his level, the learning module may be used above or below the grade level in which it has been placed. This decision is entirely within the prerogative of the local curriculum committee and/or teacher.

5. A suggested *ARTICULATION OF A CAREER AWARENESS PROGRAM IN THE AREAS OF AGRIBUSINESS, RENEWABLE NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION* is given so that curriculum planners will have an overall view of the many possible occupations which could be included in their program and the grade level in which the occupations could be related to subject matter already being taught.

6. The *LEARNING MODULES* are designed as samples which fuse the career development concepts, subject matter, and occupational information into activities using occupations as the nucleus.

   The modules in these guides deal with the affective domain (feelings), the cognitive domain (knowing), and the psychomotor skills (doing) as they develop from kindergarten through the middle or junior high school level. Each child can, on his own level, understand how a worker in agriculture affects his life, and he can gain an appreciation of that person's contribution to the well-being of society. The child is also developing the basic cognitive skills and knowledge which are further developed by adults for competency in their occupation. Most of the psychomotor skills perfected by adults had their basic beginnings in the young child. Therefore, with the providing of experiences for a child at his level, he can gain an understanding of the world of work and begin to view himself as a part of that world. As the child develops and gains experiences which he relates to himself, he will be better prepared to make a wiser career choice.

   In order to help the teacher become aware of *CAREER DEVELOPMENT CONCEPTS* which can be developed through the activities, the concept has been printed directly opposite each activity. A teacher, therefore, planning additional activities for his own individual program should plan to emphasize a career development concept within each activity. In order to insure educational awareness of the application of skills and knowledge taught in the school, emphasis should be given throughout the module on the skills used by persons in the world of work.

Each module has three basic parts: instructional information, instructional activities, and culmination or evaluation activities. The instructional information contains the career development concepts which are developed for that module, the subject matter which is needed to carry through the activities, occupational information (in some cases for the teacher only and in others for the students), and pupil performance objectives aimed primarily at the career development concepts. The instructional activities for the elementary grades are teacher-directed and are a controlled means of developing the career development concepts. For the junior high or middle school, these teacher-directed activities lead the student into individual or small group activities which are designed to give the student a few "hands-on" experiences with the kind of work encountered in an occupational area of his choice. The culmination or evaluation activities are suggested ways of measuring the objectives set for each module. Because the classroom teacher is the best qualified evaluator in her classroom, she should decide HOW a given knowledge or skill shall be demonstrated and the QUALITY and QUANTITY of knowledge or skill required for a particular child or group of children.

7. *LEARNING RESOURCES* are listed at the end of the modules. This listing is not an endorsement. In fact, not all materials listed have been reviewed in detail. The criterion for selection is the material's appropriateness to the module.

SOME QUESTIONS ASKED BY TEACHERS

Q. Where do I start?

A. *Become familiar with the entire guide by simply scanning it. You will then need to read the introductory pages. The agricultural information, the career development concepts, and the grade level articulation (in Appendices) are for reference especially needed in the development of new modules. Then you may turn directly to the modules.*

Q. Can I teach any module?

A. *An elementary teacher may choose any module found in the K-6 guide but may need to make some revision in order to successfully use it with her class if she chooses a module for a different grade level. However, there should be an articulation plan for all grades in your building in order to avoid repetition if the guide is used in the following years.*

Q. How do I choose a module?

A. *Briefly look at all modules so that you have an idea of what occupations are included. Each teacher will have individual reasons for choosing particular modules. The season, available facilities, subject matter presently being taught, and interest of students are a few factors which may influence your decision.*

Q. In a departmentalized situation, which teacher is going to use this guide?

A. *The choice of which teacher will use this guide is to be decided by the staff in each building. Since the infused subject matter areas are math, science, language arts, and social studies, all of the teachers in these areas will want to use the guide. Some of the modules will be used more effectively in some subject matter areas than in others, i.e., Supplies and Services in language arts, Equipment and Mechanics in math or science, Food Processing in science, Renewable Natural Resources in social studies, Ornamental Horticulture in art or science, Agricultural Production in science or social studies, and Environmental Protection in science or social studies.*

Q. How do I teach the module? Must it be taught separately?

A. *The guides are intended to be very flexible. The developers of the guide envision the modules as being taught most effectively when integrated with other subjects. To integrate, you might wish to look over the infused subject matter listed in the module and then use that module at the time that the subject matter is normally taught in the classroom (i.e., infused subject matter - Math, Keep and interpret tallies - teach the Park Ranger Naturalist when* *you normally teach about tallies). You might wish to teach the module as a separate subject if your program is designed to introduce a variety of occupations in a career education unit which fuses subject matter around the occupations to be studied.*

Q. Can I write modules of my own?

A. *The guide is intended as a model for you to use in developing modules which are of interest to your students and fit your community. You may want to have your modules fit in more directly with a subject matter topic you are planning to introduce.*

Q. What do I do if I do not have a resource person for the module I wish to develop?

A. *Books, films, picture cards, and tapes are the next best thing to a live body. In fact, they should be relied upon for a generalized approach to the occupation and a local resource person for more specific information about the occupation. This person is invaluable for giving first-hand, on-the-job information but may not have the general knowledge you require. Check to see of there is a person who has a similar occupation and could give the basic information required (i.e., the greenskeeper -- change to turf grower or grounds keeper). If a local resource person is not available, provide as many "hands-on experiences" as possible, which will increase the learning retention rate.*

Q. How do I decide whether or not to take a field trip and do I take the whole class?

A. *We suggest taking field trips when the information that can be obtained is valuable and if the experience is well planned. A field trip for the sake of a field trip is not advisable. Taking only a small group of interested children makes a more successful field trip especially if they have some idea as to what they are looking for and what questions to ask. Plan ahead; make sure the people you will be interviewing realize ahead of time what the children want to know. Explore your neighborhood first. Remember, taking several short, walking trips to a neighborhood garden can be worth much more than one long trip to a big farm. Decide on your major objective, and then plan for the field trip which will benefit the group the most.*

Q. What is the purpose of the matrix on page xi.

A. *The matrix is the chart showing the fusion of Career Development Concepts with experience level subject matter in an occupational learning module.*

Q. Why are there blank spaces on the matrix?

A. *The blank spaces have been left for any modules which you might wish to develop at your grade level in the areas of Agribusiness, Renewable Natural Resources, Environmental Protection, or other clusters using an appropriate Career Development Concept.*

Q. What is an occupational cluster?

A. *The wide range of occupations has been categorized by the United States Office of Education into fifteen broad clusters. In order to help facilitate the informing of students about occupations, the clusters are as follows: Business and office occupations, marketing and distribution occupations, communications and media occupations, construction occupations, manufacturing occupations, transportation occupations, agri-business and natural resources occupations, marine science occupations, public services occupations, health occupations, hospitality and recreation occupations, personal services occupations, fine arts and humanities occupations, and consumer and homemaking-related occupations.*

Q. If we study agribusiness as a cluster, do we have to set up our whole program around clusters?

A. *No. Your program can be set up in at least three different ways. We know you can think of others. (See also p. viii.)*

- *a. Clusters -- which uses a systematic approach for providing a broad program for career awareness in all occupational areas.*
- *b. Career development concepts -- which provide a more guidance oriented approach.*
- *c. Subject matter — which relates subject matter to an occupation, i.e., measuring to carpenter or cook.*

The most important part of setting up a program is setting objectives and providing for articulation both vertically and horizontally.

Q. If I plan a new module, does it have to be done in the Agribusiness, Renewable Natural Resources, and Environmental Protection clusters?

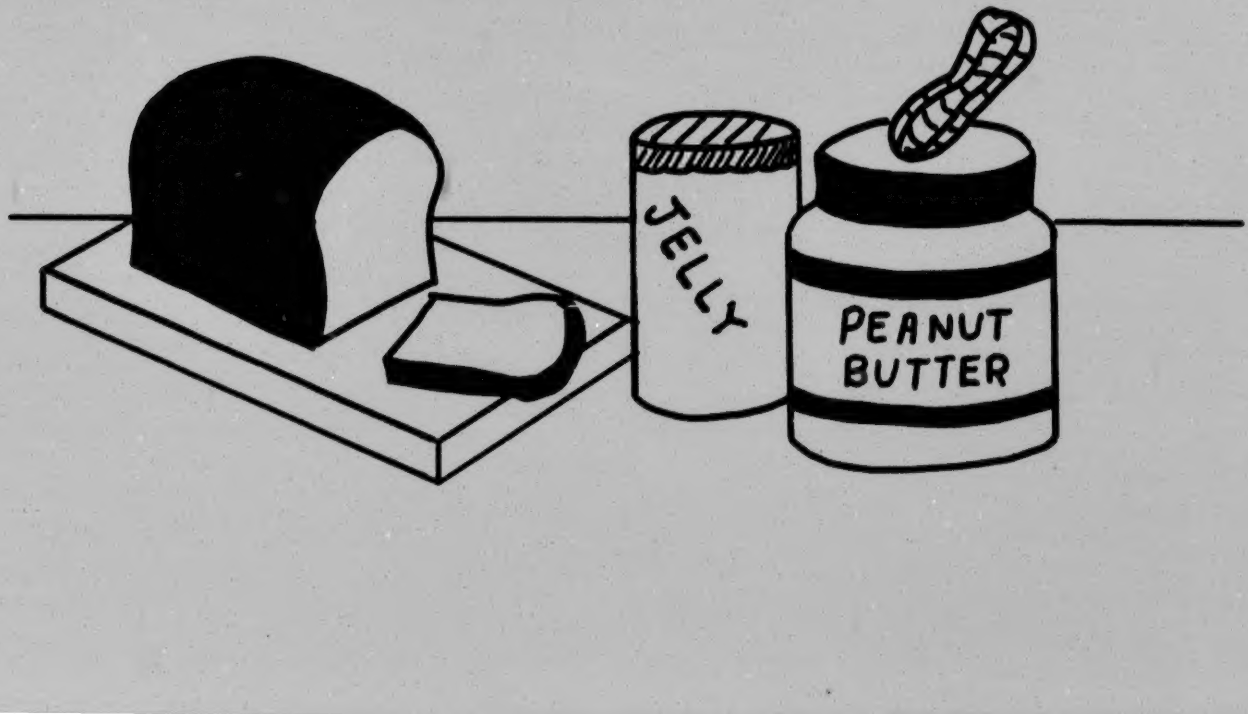
A. *You will find suggestions of additional occupations in the Agribusiness, Renewable Natural Resources, and Environmental Protection clusters in the agricultural section of the guide. However, you are free to choose any occupation in any cluster if you wish to develop a module.*

8/9

Major Career Development Dimension
LIFESTYLE

Occupational Study
PEANUT BUTTER MAKER

Peanut butter is a staple food in many households, and many children seem to think that there is only one kind of sandwich -- peanut butter and jelly. Capitalizing upon their interest in peanut butter, this study has been designed to help children learn why people work. There are many different reasons for working, and every worker has his own special reasons. Hopefully, the children will be able to see how their existence is dependent upon other people and understand the importance of each persons's contribution to the needs of others.



BEFORE YOU BEGIN

The occupational area considered in this study is that of AGRICULTURAL PRODUCTS (FOOD PROCESSING). The occupations in this area are involved in the processing of food which includes dairy processing, meat processing, and the processing of fruits, vegetables, and nuts.

This unit deals with one aspect of AGRICULTURAL PRODUCTS (FOOD PROCESSING), the processing of peanuts which are vegetables. It considers the steps involved in converting the peanuts into peanut butter while developing an awareness of the specific occupation of PEANUT BUTTER MAKER.

The developmental CAREER DEVELOPMENT DIMENSION for this particular study is that of LIFESTYLE. The concept *most people work and there are many reasons why people work* is illustrated in the study of the peanut butter maker. A simple item such as peanut butter must be made by some worker in order for us to enjoy it. Subsequently, children can enjoy peanut butter because their parents have worked to earn money to buy food. The peanut butter maker must also work so that he, too, has money to buy food for his family, including peanut butter. He may find his job of peanut butter maker an enjoyable occupation, especially if he is interested in operating equipment and machines.

The other concepts in this study are of an interacting nature. The student should begin to understand that *a great many tasks can be performed by men and women,* that *occupations require the use of specific materials and equipment,* and that *learning achievement depends upon effort and ability.*

Subject matter which is fused in the activities is listed so that the teacher might identify some of the educational knowledge and skills necessary to research and/or perform a particular occupational task during this study and/or on the job. The subject matter used is at or below the grade for which the module is written.

The occupational information given is intended to give the teacher a brief overview of some of the tasks and requirements of a person in this particular occupation. At the end of each module, a list of resources is given for additional information.

Pupil performance objectives are written for each of the career development concepts. For the acquisition of those objectives, subject matter and occupational information relevant to the level of the child's development are used. The objectives contain only a statement of terminal behavior.

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. The teacher may wish to use some of the activities for the whole class, and others may be delegated to small groups or individuals. These activities form a nucleus around

which interest can be stirred for the child and around which the teacher will want to develop additional activities.

The evaluation activities suggest various ways to evaluate the child's level of conceptualization of the career development concepts as they are stated in the pupil performance objectives. Because the classroom teacher is the best qualified evaluator in her classroom, she should decide HOW a given knowledge or skill shall be demonstrated, and the QUALITY and QUANTITY of knowledge or skill required for a particular child or group of children. The writers of these materials have also made the assumption that the teacher will decide whether she uses all or some of the suggested activities or some activities which she adds to the unit. These factors will affect the pupil evaluations.

CAREER DEVELOPMENT CONCEPTS

LIFESTYLE

Major Concept	Work affects an individual's way of life in that a person is a social being, an economic being, a family being, and a moral being.
Subconcept	*Most people work and there are many reasons why people work.*

ATTITUDES AND APPRECIATIONS

Major Concept	Society is dependent upon the productive work of individuals.
Subconcept	*A great many tasks can be performed by men and women.*

CAREER INFORMATION

Major Concept	Basic career information will aid in making career-related decisions.
Subconcept	*Occupations require the use of specific materials and equipment.*

EDUCATIONAL AWARENESS

Major Concept	Educational skills and experiences are related to the achievement of career goals.
Subconcept	*Learning achievement depends upon effort and ability.*

INFUSED SUBJECT MATTER

Mathematics
  1. Counting numbers of a set
  2. Estimates
  3. Bar graph

Language Arts
  1. Senses
  2. Creative writing
  3. Labels
  4. Vocabulary building
  5. Critical thinking

Science
  1. Plant growth
  2. Inventions
  3. Plant identification
  4. Experimental cooking

Social Studies
  1. Field trips
  2. Reasons for working
  3. Geography

OCCUPATIONAL INFORMATION

Agricultural Products (Food Processing)

The location of the bulk of the processing industry in or close to production areas highlights the fact that food processing is essentially an agricultural industry. By converting the farmer's perishable crops into more usable form, the processing industry has eliminated the waste that would otherwise result from seasonal gluts and has made these perishable crops available to the consumer year-round.

Sample occupation: A Peanut Butter Maker

. . . tends machines that make peanut butter.
. . . opens valves to fill the mixing chamber with roasted nuts and adds specific amounts of salt, sugar, and homogenized ingredients.
. . . observes gauges to determine if temperature in mixing chamber is within specified limits.
. . . turns a dial to regulate the speed of the pumps which force the mixture through the grinding chamber.
. . . opens valves to allow mixture to flow from one grinding chamber to another to obtain specified texture.
. . . transfers ground mixture into cooling mixer.
. . . tends automatic equipment that roasts nuts.
. . . fills out labels
. . . caps containers and packs containers in shipping cartons.
. . . needs a high school education.

PUPIL PERFORMANCE OBJECTIVES

LIFESTYLE

. . . express orally some reasons why one would work as a peanut butter maker or at any type of job.

ATTITUDES AND APPRECIATIONS

. . . demonstrate that the job of a peanut butter maker can be performed by men and women by performing some of the simple tasks of the peanut butter maker.

CAREER INFORMATION

. . . name some of the equipment and materials needed to make peanut butter.

EDUCATIONAL AWARENESS

. . . state some of the many uses of peanuts and be able to relate these discoveries to the efforts and abilities of George Washington Carver.

INSTRUCTIONAL ACTIVITIES

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. Use discretion as to which activities to use for the whole class and which can be delegated to small groups or individuals to be shared with the class at a later time. Develop additional activities which can add to the child's understanding of this unit.

ACTIVITIES	to develop the CAREER DEVELOPMENT CONCEPTS
1. Bring in several foods, including peanut butter, for the children to smell with their eyes closed. Ask who makes peanut butter and why they think someone might choose to do this kind of work.	*Most people work and there are many reasons why people work.* Lifestyle
2. Have the children bring a sample of the peanut butter which they eat at home. Ask them to bring the label from the jar also. Let the children taste the different brands to see which brands they like best. Why would one brand be better than another? Make a bar graph showing the different brands and how	*Learning achievement depends upon effort and ability.* Educational Awareness

many children chose a particular brand as their favorite. Talk about T.V. commercials for peanut butter. Have the children seen any of these brands advertised? Are the commercials correct in their advertisement.

3. Have the children participate in a tasting bee of products such as cookies, candy, etc. which contain peanuts or peanut butter. Discuss the workers involved in making these products. Discuss the economic interdependence of the peanut butter maker and the products or services provided by their parents for him.

Most people work and there are many reasons why people work.
Lifestyle

4. Bring in seeds that grow in pods. Have the children examine them. Look at peanuts in particular. Have the class break open the peanut shells, remove the skins, and count the peanuts in each shell. Have them conclude the average amount of peanuts found in a shell (2). See how many find special peanuts with more than the average. Have children think of faster methods of shelling nuts. Compare the hand method with the methods used in a peanut butter factory.

Occupations require the use of specific materials and equipment.
Career Information

5. Show the various stages of the development of the peanut plant and nut using illustrations or pictures of the plant. Bring in an actual peanut plant if available. Let the children draw pictures of a peanut plant and have them draw a line separating the plant into two parts, above the ground and below the ground. Show pictures of how peanuts are planted and harvested. State other names given to the peanut such as goober pea, monkey nut, and groundnut. If possible, grow peanuts at school. Be sure to use unroasted peanuts in the shell. Use a large, wide container so that the flower stalks will have space to send runners back into the soil.

A great many tasks can be performed by men and women.
Attitudes and Appreciations

6. Arrange to take the class to gather peanuts or visit a peanut butter factory to watch the actual making of peanut butter if possible. Observe the special materials and equipment used in the production and processing. If a visit to a peanut butter factory is not possible, show pictures and talk about the materials and equipment used in a factory. Some information can be found in encyclopedias.

Occupations require the use of specific materials and equipment.
Career Information

7. Talk about how peanuts would be crushed in a factory in order to make them usable for peanut butter. Crush some peanuts on a paper towel. Let the children discover the oil on the paper towel, and ask if they know what it is. Follow with a discussion of peanut oil. Make a chart with pictures showing the many uses of peanut oil. Let the children investigate labels of products which they have at home to see if any contain peanut oil (the chief use is in various vegetable shortening compounds). Discuss the use of the peanut meal, which is the remaining portion of the peanut after the oil is extracted.

Occupations require the use of specific materials and equipment.
Career Information

8. Ask students to make a bulletin board about George Washington Carver who found over 300 uses for peanuts. Tell the children about his life and discuss the effort and ability required for him to do this. Discuss the possibilities of their present and future accomplishments if they put forth a great deal of effort and use their abilities.

Learning achievement depends upon effort and ability.
Educational Awareness

9. Show a cookbook to the class and talk about the importance of recipes and how a recipe is used. Would a peanut butter maker need a recipe, too? Could both men and women follow a recipe? Could both men and women be peanut butter makers?

A great many tasks can be performed by men and women.
Attitudes and Appreciations

10. Set up an assembly line in a peanut butter factory to make peanut butter. Jobs can be the shelling of the peanuts, taking the skins from the shelled peanuts, and washing them. Also include the grinding of the peanuts in a blender (requires supervision), adding of ingredients, removing peanut butter from the blender, placing it in jars (small pill bottles could be used), and placing the jars in boxes. Use the following recipe for making the peanut butter:

Occupations require the use of specific materials and equipment.
Career Information
A great many tasks can be performed by men and women.
Attitudes and Appreciations

Peanuts in shells (any amount
desired
Oil or peanut oil (for smoothness)
Honey if desired (to add sweetness)
Salt if desired

Shell the peanuts and remove the skins. (Save the shells for collages, stringing, and other art projects.) Put the nuts into a blender and liquefy, stirring as necessary until finely chopped. Add oil and honey if desired until the peanut butter is of spreading consistency. Add salt to taste.

11. Compare similarities and differences of the methods used to make peanut butter in the classroom with those of the actual peanut butter maker. Talk about other products that are made in factories and the different positions one might find in an assembly line in those factories. Have the children express their feelings toward assembly line work.

Most people work and there are many reasons why people work.
Lifestyle
Occupations require the use of specific materials and equipment.
Career Information

12. Make peanut butter and jelly sandwiches by using the peanut butter made previously by the children and grape jelly made by the recipe found on fruit pectin containers. The grape jelly may be made with the following frozen concentrated grape jelly recipe:

Most people work and there are many reasons why people work.
Lifestyle

GRAPE JELLY

3 1/4 cups sugar
3/4 cup (6 oz. can) frozen concentrated grape juice
1 1/2 cups water
1/2 bottle Certo fruit pectin

Measure sugar and water into a large saucepan. Mix well. Place over high heat, bring to a full rolling boil, and boil hard 1 minute, stirring constantly. Remove from heat, and stir in thawed juice. Add Certo, mix well, and pour quickly into glasses. Paraffin at once or for short storage, cover and keep in refrigerator. Six medium glasses.

Use an assembly line to make sandwiches for the entire class. While the children make their own jelly and peanut butter sandwiches, name some of the many workers who make it possible for them to enjoy peanut butter sandwiches. Name some possible reasons why these workers work.

13. Duplicate large replicas of peanut butter jars for the children to cut out. Have them give their peanut butter a name and write it on the jar. Let the children dictate to the teacher their peanut butter recipe to be recorded on the back. They may decorate the front of their jar.

A great many tasks can be performed by men and women.
Attitudes and Appreciations

EVALUATION ACTIVITIES

1. Have each child state two or more reasons why he will have a job some day.

Most people work and there are many reasons why people work.
Lifestyle

2. Ask the children to bring to school a recipe using peanut butter. Make a cookbook using these recipes. Illustrate the book with pictures of the tools needed to make the product and a picture of the product itself. Have the children rate the recipes as easy, might be

A great many tasks can be performed by men and women.
Attitudes and Appreciations
Occupations require the use of specific materials and equipment.
Career Information
Learning achievement depends upon effort and ability.
Educational Awareness

hard, or too difficult for me to make.

3. Have the children present a program for their parents showing what they have learned and some of the activities in which they have participated while studying the peanut butter maker. Serve refreshments of the peanut butter and jelly sandwiches made by the children. Present each mother with a Peanut Butter Recipe Book to take home. Be sure to emphasize the career development concepts.

Most people work and there are many reasons why people work.

Lifestyle

A great many tasks can be performed by men and women.

Attitudes and Appreciations

Occupations require the use of specific materials and equipment.

Career Information

Learning achievement depends upon effort and ability.

Educational Awareness

RESOURCES

Books

Hammons, Ray O. Adventures in Cooking. New Jersey Ass'n. for the Education of Young Children, Florence P. Foster, Kenyon Chapter, New Jersey, June, 1971.

Selsam, Millicent. Peanut. William Morrow and Company, New York, 1969.

New Music Horizons Song Book, "Peanut Picking Song." Silver Burdett, Grade 5.

Audio-Visuals

Food : Story of a Peanut Butter Sandwich. Learning Corporation of America, 1971. Film.

Magic of Learning. Derby Foods, Inc., 1965. Film.

Magic of Learning, The Adventure with Peter Pan. Modern Talking Picture Service. Film.

Free Materials

Educators Guide to Free Social Studies Materials. Educators Progress Service, Incorporated, Randolph, Wisconsin, 1970.

Audio-Visuals

1. George Washington Carver, George Washington Carver Library. Tape.

Elementary Teachers Guide to Free Curriculum Materials. Educators Progress Service, Incorporated, Randolph, Wisconsin, 1970.

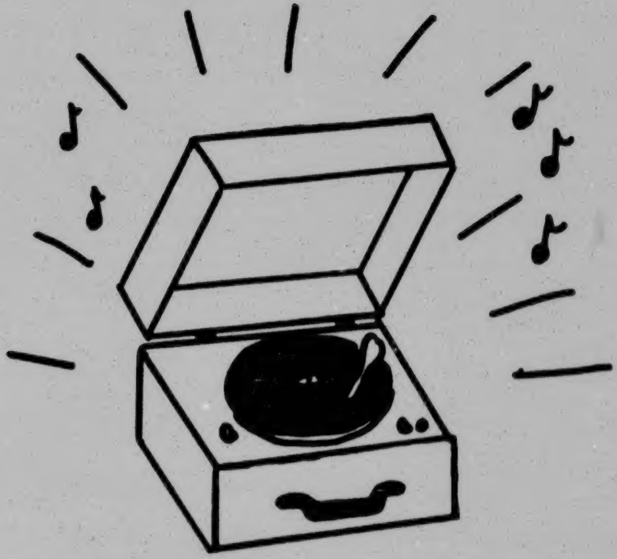
Printed Materials

1. Peanuts and Peanut Butter, National Peanut Council
2. Peanuts As You Like Them, National Peanut Council
3. Peanuts in the Kitchen, National Peanut Council
4. The Unusual Story of the Peanut, Corn Products Company
5. A Visit to the Bakery, ITT Continental Baking Company

You and Peter Pan in the Kitchen. From the Kitchen of Peter Pan, 3327 West 48th Place, Chicago, Illinois 60632.

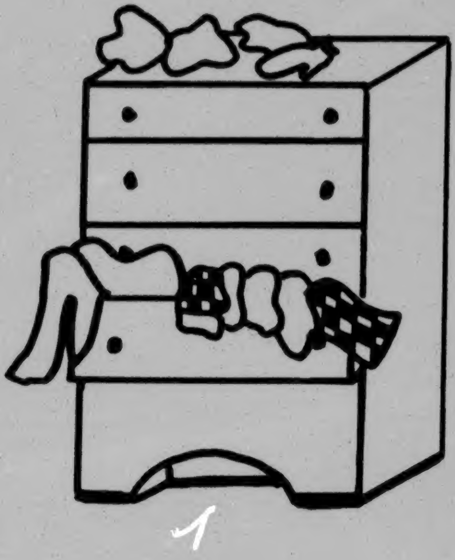
Organizations

Planter's Peanuts (Division of Standard Brands, Inc.), Suffolk, Virginia 23434.

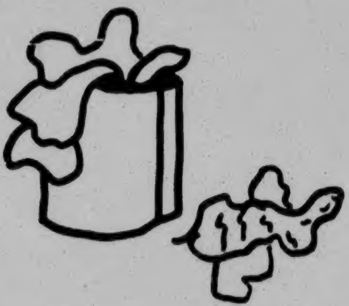


Major Career Development Dimension
SELF-DEVELOPMENT

Occupational Study
ENVIRONMENTAL INSPECTOR



The child at the primary level is very curious about his environment. He is very interested in all that is going on about his home and school. In order that people develop a concern about the conditions of their world, they must first be concerned with their immediate world -- their home and community. Therefore, these materials are designed to help the child see his part in caring for his home and school. He begins to see that adults are concerned about the environment for a very valid reason, and he begins to see his place in the structure of the family as well as in the classroom.



BEFORE YOU BEGIN

The occupational area considered in this study is that of ENVIRONMENTAL PROTECTION. This study is concerned with the protection of water, air, and soil which are essential to man's survival and the elimination or control of man-made elements or practices which are harmful to himself and to the environment.

This unit deals with the reduction of the amount of pollution in our environment, which is one aspect of the area of ENVIRONMENTAL PROTECTION. It considers the concern individuals should have for their immediate environment as well as the concern for their community and world problems while developing an awareness of the specific occupation of ENVIRONMENTAL INSPECTOR.

The most important CAREER DEVELOPMENT DIMENSION for this particular study is that of SELF-DEVELOPMENT. Part of self-development is the *awareness of oneself within the context of the family structure.* This is also important in relating to the school world. This concept is stressed in relation to environmental protection, showing that each person has a responsibility to care for the area around him -- in this case, the home and classroom. The environmental inspector should be considered as another person who helps take care of our world. He is concerned with the health and well-being of people both in the present and in the future.

The other Career Development Concepts in this study are of an interacting nature. The students should gain an understanding that their actions affect their world, that *work involves the acceptance of responsibility for a task,* that *the individual worker determines which aspects of an occupation may be unpleasant or pleasant,* and that *learning is a lifelong process.*

Subject matter which is fused in the activities is listed so that the teacher might identify some of the educational knowledge and skills necessary to research and/or perform a particular occupational task during this study and/or on the job. The subject matter used is at or below the grade for which the module is written.

The occupational information given is intended to give the teacher a brief overview of some of the tasks and requirements of a person in this particular occupation. At the end of each module, a list of resources is given for additional information.

Pupil performance objectives are written for each of the career development concepts. For the acquisition of those objectives, subject matter and occupational information relevant to the level of the child's development are used. The objectives contain only a statement of terminal behavior.

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. The teacher may wish to use some of the activities for the whole class, and others may be delegated to small groups or individuals. These activities form a nucleus around which interest can be stirred for the child and around which the teacher will want to develop additional activities.

The evaluation activities suggest various ways to evaluate the child's level of conceptualization of the career development concepts as they are stated in the pupil performance objectives. Because the classroom teacher is the best qualified evaluator in her classroom, she should decide HOW a given knowledge or skill shall be demonstrated, and the QUALITY and QUANTITY of knowledge or skill required for a particular child or group of children. The writers of these materials have also made the assumption that the teacher will decide whether she uses all or some of the suggested activities or some activities which she adds to the unit. These factors will affect the pupil evaluations.

CAREER DEVELOPMENT CONCEPTS

SELF-DEVELOPMENT

Major Concept	An understanding and acceptance of self is important.
Subconcept	*Awareness of oneself within the context of the family structure is important.*

ATTITUDES AND APPRECIATIONS

Major Concept	Society is dependent upon the productive work of individuals.
Subconcept	*Work involves the acceptance of responsibility for a task.*

CAREER INFORMATION

Major Concept	Basic career information will aid in making career-related decisions.
Subconcept	*The individual worker determines which aspects of an occupation may be unpleasant or pleasant.*

EDUCATIONAL AWARENESS

Major Concept	Educational skills and experiences are related to the achievement of career goals.
Subconcept	*Learning is a lifelong process.*

INFUSED SUBJECT MATTER

Mathematics
1. Weights
2. Records

Language Arts
1. Role playing
2. Label reading

Science
1. Importance of plants, color, light and cleanliness to the environment
2. Observations
3. Experiments with air, water
4. Health
5. Definition of noise

Social Studies
1. Family life
2. Individuality and responsibility
3. Care of the environment

OCCUPATIONAL INFORMATION

Environmental Protection

Occupations in this area are involved in the protection of water, air, and soil, all of which are essential to man's survival, and the elimination or control of man-made elements which are harmful to man and to the environment.

Sample Occupation: An Environmental Inspector

. . . analyzes and reports on the samples and data that are collected.
. . . inspects selling, processing, handling, or storing establishments.
. . . inspects physical facilities for cleanliness and safety.
. . . inspects the cleanliness of the personnel.
. . . inspects the products for quality and contaminants.
. . . uses filtering devices, samplers, ultraviolet lights, microscopes, and radiation detectors.
. . . helps prevent outbreaks of disease.
. . . works indoors and out-of-doors.
. . . instructs plant employees on safety procedures.
. . . demonstrates the use of protective equipment, devices, and clothing.
. . . makes recommendations for legal action for noncompliance with federal, state, and local statutes.
. . . has possible requirement of a high school, technical, or college training.

PUPIL PERFORMANCE OBJECTIVES

SELF-DEVELOPMENT

. . . name some ways that a child can improve his home environment for the purpose of helping to protect the members of his family.

ATTITUDES AND APPRECIATIONS

. . . tell what might happen to other members of a family if a child failed to complete the assigned task of carrying out the trash.

CAREER INFORMATION

. . . role play some duties of an environmental inspector that can be done by children and decide which are pleasant or unpleasant.

EDUCATIONAL AWARENESS

. . . make drawings showing people of all ages doing things which an environmental inspector might recommend in order to help protect the environment.

INSTRUCTIONAL ACTIVITIES

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. Use discretion as to which activities to use for the whole class and which can be delegated to small groups or individuals to be shared with the class at a later time. Develop additional activities which can add to the child's understanding of this unit.

ACTIVITIES to develop the	CAREER DEVELOPMENT CONCEPTS
1. Have the children paint pictures of their family. Discuss chores they each do at home to care for that "environment."	*Awareness of oneself within the context of the family structure is important.* **Self-Development** *Work involves the acceptance of responsibility for a task.* **Attitudes and Appreciations**
2. Have a mother visit the school and show the tools and materials she uses to care for the home environment. Have her relate which tasks she enjoys and which she does not. Elicit her reasons. Inquire as to whether she has learned any new ways, products, and reasons for caring for her home. Have her relate how things she does help to prevent disease from spreading in her home.	*Learning is a lifelong process.* **Educational Awareness** *The individual worker determines which aspects of an occupation may be unpleasant or pleasant.* **Career Information**

3. Compare and/or contrast with the class the housekeeping activities of a mother with those of caring for a classroom. Are there some tasks which some individuals dislike and others like? Compare and/or contrast these activities with those of grandparents. Talk about some of the tasks which may need to be done in the future.

The individual worker determines which aspects of an occupation may be unpleasant or pleasant.
Career Information
Learning is a lifelong process.
Educational Awareness

4. Show pictures of things children can do at home to improve their home and classroom environment such as hanging up clothes, putting paper in trash can, making beds, growing plants, caring for pets. Discuss with the children the implications of taking the responsibility of a task.

Work involves the acceptance of responsibility for a task
Attitudes and Appreciations
Awareness of oneself within the context of the family structure is important.
Self-Development

5. Show the tools that can be used in the classroom to protect its environment. Compare and/or contrast these with those used at home. Are there some tools that only adults use? Are there some that anyone could use? Does age or sex make a difference in using tools or in task selection?

Awareness of oneself within the context of the family structure is important.
Self-Development

6. Use a photograph of the classroom barren of all pictures, decorations, and plants, and discuss with the class the objects which are missing and elicit reasons for their return. Point out the importance of color, cleanliness, light, and plants in the classroom environment, home environment, and the outside world. What is each individual's role in making the classroom pleasant and safe.

Work involves the acceptance of responsibility for a task.
Attitudes and Appreciations

7. Have students construct and label puppets which show different jobs. Role play these activities as they relate to the home, school, and total environment. Be sure to include an inspector. Be sure to point out his importance in helping the community care for itself and others.

Work involves the acceptance of responsibility for a task.
Attitudes and Appreciations

8. Take a trip around the school to see a larger environment. Lead the children to point out things that children can do and things that adults can do; point out areas of pollution which inspectors might have to report.

Awareness of oneself within the context of the family structure is important.

Self-Development

9. Ask the class to perform the following experiments to show how man is constantly learning about his environment and how he can protect and improve it:

Learning is a lifelong process.

Educational Awareness

Work involves the acceptance of responsibility for a task.

Attitudes and Appreciations

Air: Use an electric vacuum; look at the dirt in the bag. Look at new and used furnace filters. Outline an area in the room where dust is allowed to accumulate. Record clear and smoggy days. Discuss how the air gets dirty. What is man doing to clean it?

Water: Filter some dirty water (collected during a day at school) through a paper filter. Look at water under a microscope. Let water in an open jar and tin can set for a week. Compare with water fresh from the drinking fountain. Set out a pan of water covered with a scum of oil. Stir the water with a feather. Discuss how water gets dirty and how oil affects water birds. What is man doing to clean water?

Plants: Discuss the oxygen-carbon dioxide cycle of man and plants. Hypothesize the value of plants in the classroom, and plants and trees in the neighborhood. Put oil on one plant's leaves; keep another plant clean. What happens?

Waste materials: Weigh waste paper thrown away each day. Record kinds of things thrown away. Discuss conservation of materials. Suggest materials which can be reused or recycled (teachers are renowned for doing this).

Noise: Classify sounds in and out of the classroom as disturbing or undisturbing. Discuss ways to muffle or reduce the sounds. Are some sounds not considered noise by everyone? Why?

10. Demonstrate how cleanliness prevents disease from spreading. Talk about good health habits. Talk about how colds spread, why we sometimes have stomach aches from spoiled food, and how proper clothing protects the body. Discuss the role of the environmental inspector who watches to see that people who prepare our food and water must be clean. Also, point out some occupations where the workers must wear particular clothing to protect themselves. Visit the school cafeteria. Interview the workers to learn about cleanliness in that environment.

Work involves the acceptance of responsibility for a task.
Attitudes and Appreciations

11. Let the children make pictures or posters to be displayed in the school halls to remind others of environmental problems. Ask them to include simple slogans. Give assistance when needed.

Work involves the acceptance of responsibility for a task.
Attitudes and Appreciations

12. Tell the children about the dangers of drinking unclean water. Discuss why and how water is made safe for drinking. Take a guided tour through the local water treatment plant. Be sure to note the role of water towers.

Learning is a lifelong process.
Educational Awareness

13. Let the children assume the roles of environmental inspectors by looking for evidence of environmental problems shown in magazine or newspaper pictures. Have them cut out the pictures to be used later for a collage-type bulletin board display. As a group, examine the pictures to discover the many problems of which an environmental inspector must be aware.

Work involves the acceptance of responsibility for a task.
Attitudes and Appreciations

EVALUATION ACTIVITIES

1. Use a photograph of the classroom on a particularly messy and tiresome day. Perhaps a tape recorder could record the high level of noise. Define noise. Have the children suggest ways they could improve that environment. Role play

The individual worker determines which aspects of an occupation may be unpleasant or pleasant.
Career Information
Work involves the acceptance of responsibility for a task.
Attitudes and Appreciations

the part of the inspector; what things were unsafe, unsanitary, noisy, and littered? Have the children discuss which jobs they like to do and which they do not. Develop the idea that in order to have a healthy and pleasant environment, everyone must do some pleasant and unpleasant jobs. Have children make a picture of a room and prepare a transparency overlay to show it messy or neat.

2. Provide a role-playing situation in which the student demonstrates the responsibilities about which a member of his family or classroom needs to be aware if a particular area is to be kept clean. Discuss the types of work assigned to each family member. Do mothers or fathers ever learn new or better ways of doing a job? Why do different people do different jobs? Can everyone do the same job as easily as another? Is it important for everyone to complete his job? Why?

Awareness of oneself within the context of the family structure is important.

Self-Development

Work involves the acceptance of responsibility for a task.

Attitudes and Appreciations

Learning is a lifelong process.

Educational Awareness

RESOURCES

Books

Chester, Michael. Let's Go To Stop Air Pollution. G. P. Putnam's Sons, New York, N. Y., 1969.

____________. Let's Go To Stop Water Pollution. G. P. Putnam's Sons, New York, N. Y., 1968.

Gabel, Margaret. Sparrows Don't Drop Candy Wrappers. Dodd, Mead and Company, 1971.

Halacy, D. S. Now or Never; The Fight Against Pollution. Four Winds, 1971.

Sale, Larry L. and Ernest W. Lee. Environmental Education in the Elementary School. Holt, Rinehart and Winston, Inc., New York, N. Y., 1972.

Thompson, Ross. A Noisy Book. Silver Burdett/Time-Life, 1972.

Instructor, "Environmental Education." January, 1971.

Water - What Would We Do Without It? and Air Pollution Environmental Activities. Educational Reprints from Ranger Rick's Nature Magazine, Charles E. Merrill Publishing Co., 1300 Alum Creek Drive, Columbus, Ohio 43216.

Audio-Visuals

A Community Keeps Healthy. Bailey Film Associates. Film.

Our Family Works Together. Churchhill Films. Film.

Free Materials

Educators Guide to Free Science Materials. Educators Progress Service, Incorporated, Randolph, Wisconsin, 1970.

Printed Materials

1. The Story of Water Supply, Cast Iron Pipe Research Association
2. Telling the Anti-Litter Story F-28, Standard Oil Company of California
3. Who Is Howdy?, Good Outdoor Manners Association

Audio-Visuals

1. Lassie's Litter Bit, Modern Talking Picture Service. Film.
2. The Litterbug, Association Films, Incorporated. Film.
3. Pure Water and Public Health, Modern Talking Picture Service. Film.

Educators Guide to Free Social Studies Materials. Educators Progress Service, Incorporated, Randolph, Wisconsin, 1970.

Audio-Visuals

1. Heritage of Splendor, Association Films, Incorporated. Film.

Major Career Development Dimension
COPING BEHAVIOR

Occupational Study
PARK RANGER NATURALIST

Children at the primary level are very much interested in all forms of wildlife. They may have had some contacts with park workers, whom they can identify by their uniforms. This unit is designed to help children develop their powers of observation and classification skills and at the same time to help them become aware of the many tasks of the park ranger naturalist. In order to develop an appreciation of the park and the personnel who work there, many experiences are provided in this unit which identify some of the knowledge and skills needed in this particular work setting.

BEFORE YOU BEGIN

The occupational area considered in this study is that of the RENEWABLE NATURAL RESOURCES. The occupations in this area are involved in the conservation and management of forests, soil, wildlife, water, fish, range, and in the provision of facilities for recreation.

This unit deals with recreational development, which is one aspect of the area of RENEWABLE NATURAL RESOURCES. It considers the provision of facilities for recreation and the provision of information concerning the park area for visitors while developing an awareness of the specific occupation of the PARK RANGER NATURALIST.

The developmental CAREER DEVELOPMENT DIMENSION for this particular study is that of COPING BEHAVIOR. The concept that *several skills may be required to perform a given task* seems quite appropriate for this topic as the ranger must be able to do many things from public speaking and demonstrating to helping lost children.

The other concepts in this study are of an interacting nature. The student should begin to understand that *occupations may have certain dress requirements and work settings,* that *a great many tasks can be performed by men or women,* and that *knowledge and skills in subject areas are helpful in occupational competence.*

Subject matter which is fused in the activities is listed so that the teacher might identify some of the educational knowledge and skills necessary to research and/or perform a particular occupational task during this study and/or on the job. The subject matter used is at or below the grade for which the module is written.

The occupational information given is intended to give the teacher a brief overview of some of the tasks and requirements of a person in this particular occupation. At the end of each module, a list of resources is given for additional information.

Pupil performance objectives are written for each of the career development concepts. For the acquisition of those objectives, subject matter and occupational information relevant to the level of the child's development are used. The objectives contain only a statement of terminal behavior.

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. The teacher may wish to use some of the activities for the whole class, and others may be delegated to small groups or individuals. These activities form a nucleus around which interest can be stirred for the child and around which the teacher will want to develop additional activities.

The evaluation activities suggest various ways to evaluate the child's level of conceptualization of the career development concepts as they are

stated in the pupil performance objectives. Because the classroom teacher is the best qualified evaluator in her classroom, she should decide HOW a given knowledge or skill shall be demonstrated, and the QUALITY and QUANTITY of knowledge or skill required for a particular child or group of children. The writers of these materials have also made the assumption that the teacher will decide whether she uses all or some of the suggested activities or some activities which she adds to the unit. These factors will affect the pupil evaluations.

CAREER DEVELOPMENT CONCEPTS

COPING BEHAVIOR

Major Concept	Individuals can learn to perform adequately in a variety of occupations and occupational environments.
Subconcept	*Several skills may be required to perform a given task.*

CAREER INFORMATION

Major Concept	Basic career information will aid in making career-related decisions.
Subconcepts	*Occupations may have certain dress requirements. Occupations have their own work settings.*

ATTITUDES AND APPRECIATIONS

Major Concept	Society is dependent upon the productive work of individuals.
Subconcept	*A great many tasks can be performed by men or women*

EDUCATIONAL AWARENESS

Major Concept	Educational skills and experiences are related to the achievement of career goals.
Subconcept	*Knowledge and skills in subject areas are helpful in occupational competence.*

INFUSED SUBJECT MATTER

Mathematics
   1. Counting
   2. Keeping and interpreting tallies

Language Arts
   1. Public speaking - role playing
   2. Experience charts
   3. Interviewing

Science
1. Conservation of resources
2. Identification of plants and animals
3. Observation
4. Classification

Social Studies: Comparison of job functions of workers

OCCUPATIONAL INFORMATION

Renewable Natural Resources

Agricultural resources which are capable of reproducing or replenishing themselves are known as renewable natural resources. The occupations in this study are involved in the conservation and management of these resources for the economic and recreational benefit of mankind.

Sample Occupation: A Park Ranger Naturalist

. . . wears a uniform.
. . . knows about the natural features of his area.
. . . knows how to build a campfire.
. . . leads group singing at a campfire sometimes.
. . . is sometimes called one of the "men and women in green."
. . . is responsible for protecting the wildlife and natural features of the area.
. . . feels at ease speaking to the public.
. . . helps lost children find their parents.
. . . prepares schedules of campfire talks and hikes, including the topics, times, and locations of each, to be posted on bulletin boards throughout the park or in the visitors center.
. . . works out-of-doors most of the time regardless of the weather.
. . . needs a college education.
. . . enforces the rules of the park.

PUPIL PERFORMANCE OBJECTIVES

COPING BEHAVIOR

. . . role play a few of the activities a park ranger naturalist performs to do his job successfully.

CAREER INFORMATION

. . . identify the park ranger naturalist from pictures of people dressed in different working uniforms and describe the kind of setting in which he works.

ATTITUDES AND APPRECIATIONS

. . . cite several ways in which the individual can help protect the park environment.

. . . classify tasks of the park ranger naturalist which can be done by men or women.

EDUCATIONAL AWARENESS

. . . classify pictures of wildlife as birds, wildflowers, insects, mammals, and trees.

INSTRUCTIONAL ACTIVITIES

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. Use discretion as to which activities to use for the whole class and which can be delegated to small groups or individuals to be shared with the class at a later time. Develop additional activities which can add to the child's understanding of this unit.

ACTIVITIES to develop the CAREER DEVELOPMENT CONCEPTS

1. Let the children help write a letter to be duplicated and sent to the state asking for information regarding recreational areas in the state. When the information arrives, give time for the children to look at the pictures in order to view the different parks and monuments. Follow with a discussion of a ranger's work setting in each of these areas and note differences. Talk about how the work setting would affect the ranger's life.

Occupations have their own work settings.

Career Information

2. Have the class do some research on campfires finding out the names of the different types, the skills involved in building each type, the purpose of each, conditions necessary for a fire, the type of wood needed, and safety precautions for putting out the fire. Discuss this information with the children and use pictures or diagrams to show the construction of the various fires. If possible, let the children gather wood suitable for each stage of the campfire. Choose

Several skills may be required to perform a given task.

Coping Behavior

A great many tasks can be performed by men or women.

Attitudes and Appreciations

a spot on the playground or in the classroom to demonstrate the construction of a campfire. (Perhaps a boy scout would give a campfire building demonstration.

3. Talk about the damage done by forest fires. Let the children suggest ways in which such fires start. Talk about a ranger's role in preventing and fighting fires. Let the children draw pictures of some of the duties of a ranger in relation to forest fires.

Several skills may be required to perform a given task.

Coping Behavior

4. Discuss the reasons for the establishment of state and national parks. For a bulletin board display, let the children bring in literature and/or pictures of parks which they have visited. Have each tell a little about the park, whether the ranger was a man or woman, what the ranger wore and did, and what they as park visitors did while in the park. Be sure the children understand their responsibility in preserving parks for future use.

A great many tasks can be performed by men or women.

Attitudes and Appreciations

Occupations may have certain dress requirements.

Career Information

5. Ask some children to make oral reports about camping since camping has become a popular recreation. Make a chart of the regulations which campers must follow when camping in state or national parks. (Many regulations are the same for privately owned campgrounds.) Talk about the necessity of such regulations. Discuss the ranger's role in park camping.

Several skills may be required to perform a given task.

Coping Behavior

6. Have the children tell all of the things they have learned in school which are things also needed by a park ranger naturalist in performing his job such as learning to identify plants and animals.

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

7. Let the children role play a park ranger helping a child who is lost from his parents. Be sure that the children understand what information they as children need to be

Several skills may be required to perform a given task.

Coping Behavior

able to give to an adult if they are lost so that parents can be contacted.	
8. Take a field trip to a national or state park. Interview the park ranger. Find out what some of the tasks are that he must perform. Find out why he wears a uniform. Have the ranger conduct a tour of his work setting and demonstrate some of his major tasks. Can both men and women work in this occupation?	*Several skills may be required to perform a given task.* Coping Behavior *Occupations may have certain dress requirements.* Career Information *Knowledge and skills in subject areas are helpful in occupational competence.* Educational Awareness *A great many tasks can be performed by men or women.* Attitudes and Appreciations
9. Have the children prepare a mural or diorama showing the work setting of a park ranger.	*Occupations have their own work settings.* Career Information
10. Assign the role of a park ranger naturalist to one child and have him take the class on a walk through the schoolyard, telling his classmates about the interesting points along the way.	*Several skills may be required to perform a given task.* Coping Behavior
11. Have a child role play a situation in which he attempts to disturb the wildlife. The park naturalist then role plays the best way to handle this situation.	*Several skills may be required to perform a given task.* Coping Behavior
12. Take a walk in a park or schoolyard, counting and keeping tally of the number of birds, flowers, trees, animals, insects, etc.	*Knowledge and skills in subject areas are helpful in occupational competence.* Educational Awareness
13. Help the children learn to identify some of the trees and other wildlife in the schoolyard. Introduce identification tools and discuss their value to a park naturalist.	*Knowledge and skills in subject areas are helpful in occupational competence.* Educational Awareness
14. Plan an experiment using two plants of the same kind. Allow the children to pull off one leaf each day from one of the plants. Hypothesize what will happen. Record	*Knowledge and skills in subject areas are helpful in occupational competence.* Educational Awareness

what does happen. Write an experience chart on the experiment. Encourage the children to express what they can do to protect the environment in park areas.

EVALUATION ACTIVITIES

1. Ask the class to collect pictures of workers from newspapers, magazines, etc. and classify those who work indoors, out-of-doors, those who wear uniforms, and those who do not.

Occupations may have certain dress requirements.
Career Information
Occupations have their own work settings.
Career Information

2. Have the children compare and/or contrast the duties, skills, work setting, and uniform of the park naturalist with those of another worker whom they have studied. Sample: Compare and/or contrast the park naturalist with a city policeman.

Occupations may have certain dress requirements.
Career Information
Occupations have their own work settings.
Career Information
A great many tasks can be performed by men or women.
Attitudes and Appreciations
Several skills may be required to perform a given task.
Coping Behavior
Knowledge and skills in subject areas are helpful in occupational competence.
Educational Awareness

3. Have the children plan a day at the park. Some children could be campers, some rangers, and some other workers found at the park. Plan a nature trip, a campfire talk, and other activities which are enjoyed by campers and which are provided by the park ranger naturalist.

Several skills may be required to perform a given task.
Coping Behavior

RESOURCES

Books

Buchheimer, Naomi. I Know a Ranger. G. P. Putnam's Sons, New York, N. Y., 1970.

Buck, Margaret Waring. Along the Seashore. Abingdon, 1964. 71 p. illus. map.

Colby, C. B. Park Rangers; the Work, Thrills and Equipment of the National Park Rangers. Coward-McCann, 1955. 48 p. illus. (1-3).

Gates, Richard. The True Book of Conservation. Children's Press, Chicago, Illinois, 1959.

Holden, John L. The Young Sportsman's Guide to Camping. Thomas Nelson and Sons, New York, N. Y., 1962.

Lathrop, Dorothy P. Let Them Live. Macmillan, New York, N. Y., 1951. 80 p. illus. (4-6).

Lynn, Gordon. The Golden Book of Camping and Camp Crafts. Golden Press, New York, N. Y., 1959.

Golden Nature Guide Series. Golden Press, New York, N. Y., 1962.

Audio-Visuals

Conservation for Beginners. Coronet Instructional Films, 1970. Film.

In the Bag. Walt Disney Productions.

Joey and the Ranger. Coast Visual Education Co., 1970. (1-3) Film.

A Walk Around a Pond. Jam Handy, 1969. (1-3) filmstrip.

A Walk in the Field. Jam Handy, 1969. (1-3) filmstrip.

A Walk in the Sand Dunes. Jam Handy, 1969. (1-3) filmstrip.

A Walk in the Woods. Jam Handy, 1969. (1-3) filmstrip.

Free Materials

Educators Guide to Free Science Materials. Educators Progress Service, Incorporated, Randolph, Wisconsin, 1970.

Printed Materials

1. Conservation Activities for Young People, U. S. Department of Agriculture, Forest Service.
2. First Aid and Care of Small Animals, Animal Welfare Institute.
3. Who is Howdy? Good Outdoors Manners Association.
4. The World Around You -- Educational Packet, Garden Club of America.

Audio-Visuals

1. Nature Adventure in Southern Indiana, Richardson Wildlife Sanctuary, Incorporated. Filmstrip.

Educators Guide to Free Social Studies Materials. Educators Progress Service, Incorporated, Randolph, Wisconsin, 1970.

Audio-Visuals

1. Shenandoah National Park of Virginia, Virginia State Travel Service. Film.

Elementary Teachers Guide to Free Curriculum Materials. Educators Progress Service, Incoporated, Randolph, Wisconsin, 1970.

Printed Materials

1. California State Parks Informational Material, California Department of Parks and Recreation.
2. Guide to Your National Forests, Parks, Monuments, and Historic Sites, Phillips Petroleum Company.
3. How to Teach Wilderness Conservation, Sierra Club.

4. Outdoor Safety Tips PA 887, U. S. Department of Agriculture, Forest Service.
5. Ranger 'rithmetic for First and Second Grade Teachers FS-1, U. S. Department of Agriculture, Forest Service.
6. When You Are In the Woods, State University College of Forestry at Syracuse University.
7. You Can Teach Wilderness Conservation, Sierra Club.

Organizations

National Park Service, United States Department of the Interior,
Washington, D. C. 20240.

State Departments of Conservation, Division of Parks and Memorials,
State Capitols.

10-20-10
Lime

Major Career Development Dimension
SELF-DEVELOPMENT

Occupational Study
AGRONOMIST

Most children of primary age have had experience playing and/or digging in dirt, sand, or mud. They are also well aware of some of the many plants growing in the soil. This familiarity with plants and soil can be used to introduce the children to the occupation of the agronomist. By actually learning and doing some of the things an agronomist knows and does, the children can begin to see that the school helps prepare them for the future in many ways, including helping them to become aware of occupations which could make use of their particular interests and talents.

BEFORE YOU BEGIN

The occupational area considered in this study is that of AGRICULTURAL SUPPLIES AND SERVICES. The occupations in this area are concerned with the agricultural services and supplies which the agricultural producer does not provide for himself. Supplies included are feeds, fertilizers, chemicals, and seeds; and the services are involved in research, teaching, consulting, marketing, and sometimes the application of agricultural supplies where needed.

This unit deals with the use of consultant services for seed selection and improvement of the soil for plant growth, which result in increased crop production. As consideration is given to some services provided for the agricultural producer, an awareness of the specific occupation of the AGRONOMIST is developed.

The developmental CAREER DEVELOPMENT DIMENSION for this particular study is that of SELF-DEVELOPMENT. The concept *the school can provide an opportunity to enhance self-development* is illustrated through a study of the agronomist. He is a person who seems to have an understanding of his own interests and abilities and knows that education can help him obtain a job in which these abilities and interests can be used. School offers experiences which help him to develop some of the intellectual, social, and emotional qualities needed in the occupation of an agronomist.

The other concepts in this study are of an interacting nature. The student should begin to understand that *work involves the acceptance of responsibility for a task,* that *occupations have their own work settings,* and that *career-oriented learning may take place in or out of school.*

Subject matter which is fused in the activities is listed so that the teacher might identify some of the educational knowledge and skills necessary to research and/or perform a particular occupational task during this study and/or on the job. The subject matter used is at or below the grade for which the module is written.

The occupational information given is intended to give the teacher a brief overview of some of the tasks and requirements of a person in this particular occupation. At the end of each module, a list of resources is given for additional information.

Pupil performance objectives are written for each of the career development concepts. For the acquisition of those objectives, subject matter and occupational information relevant to the level of the child's development are used. The objectives contain only a statement of terminal behavior.

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. The teacher may wish to use some of the activities for the whole class, and others may be delegated to small groups or individuals. These activities form a nucleus around which interest can be stirred for the child and around which the teacher will want to develop additional activities.

The evaluation activities suggest various ways to evaluate the child's level of conceptualization of the career development concepts as they are stated in the pupil performance objectives. Because the classroom teacher is the best qualified evaluator in her classroom, she should decide HOW a given knowledge or skill shall be demonstrated, and the QUALITY and QUANTITY of knowledge or skill required for a particular child or group of children. The writers of these materials have also made the assumption that the teacher will decide whether she uses all or some of the suggested activities or some activities which she adds to the unit. These factors will affect the pupil evaluations.

CAREER DEVELOPMENT CONCEPTS

SELF-DEVELOPMENT

Major Concept	Social, economic, educational, and cultural forces influence self-development.
Subconcept	*The school can provide an opportunity to enhance self-development.*

ATTITUDES AND APPRECIATIONS

Major Concept	Society is dependent upon the productive work of individuals.
Subconcept	*Work involves the acceptance of responsibility for a task.*

CAREER INFORMATION

Major Concept	Basic career information will aid in making career-related decisions.
Subconcept	*Occupations have their own work settings.*

EDUCATIONAL AWARENESS

Major Concept	Educational skills and experiences are related to the achievement of career goals.
Subconcept	*Career-oriented learning may take place in or out of school.*

INFUSED SUBJECT MATTER

Mathematics
1. Grouping
2. Counting
3. Ratio
4. Measuring

Language Arts
1. Definitions
2. Experience charts
3. Poetry
4. Cause, effect, sequence

Science
1. Use of a magnifying glass
2. Plant growth and nutrition
3. Seed, insect, and weed identification
4. Classification
5. Experiments with soil, plants, and seeds
6. Germination

Social Studies
1. Maps
2. Map picture symbols

OCCUPATIONAL INFORMATION

Agricultural Supplies and Services

This occupational area is concerned with the production, processing, distribution, and use of consumable supplies by the agricultural producer in the production of animals, plants, and their products. This area also includes services such as research, instruction, and application of materials as needed in the use of those supplies.

Sample Occupation - An Agronomist

. . . surveys the soil to determine its suitability for various uses.
. . . conducts experiments or investigates infield crop programs.
. . . plans and carries out breeding studies at experimental stations to develop improved varieties with respect to yield, quality, and adaptation to specific soils or climates and resistance to disease and pests.
. . . studies crop production to discover best methods of planting, cultivating, and harvesting.
. . . studies the effect of various climatic conditions on crops.
. . . develops methods of control of noxious weeds, crop disease, and insect pests.
. . . studies the environment to determine how man uses and alters it.
. . . needs a B. S. Degree in Agronomy.

PUPIL PERFORMANCE OBJECTIVES

SELF-DEVELOPMENT

. . . choose a fantasy occupation and give reasons for the choice.

ATTITUDES AND APPRECIATIONS

. . . name some of the jobs in the classroom that must be done in order for each school day to go smoothly and tell what would happen if the person responsible for each job failed to do it.

CAREER INFORMATION

. . . describe some different work settings and indicate those which an agronomist might have.

EDUCATIONAL AWARENESS

. . . draw some pictures of an agronomist performing various duties and tell where he could have learned to do each duty -- at school, out of school, or both.

INSTRUCTIONAL ACTIVITIES

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. Use discretion as to which activities to use for the whole class and which can be delegated to small groups or individuals to be shared with the class at a later time. Develop additional activities which can add to the child's understanding of this unit.

ACTIVITIES to develop the CAREER DEVELOPMENT CONCEPTS

1. Read to the class the poem "Mud" by Polly Chase Boyden which can be found in anthologies. Discuss the poem and the feel of mud with the class. Then ask them what mud is. Lead into the meaning of soil and other terms we apply to it. Talk about the uses of soil and the fun children have with soil such as making mud pies, digging for worms, swinging from a tree held in place by soil, etc. Write the word "soil" on the board.

The school can provide an opportunity to enhance self-development.
Self-Development

2. Give the children the responsibility of bringing in some soil to study. Have them be prepared to tell where they obtained

Work involves the acceptance of responsibility for a task.
Attitudes and Appreciations

the soil and if anything were growing in it. Look at the different kinds under a magnifying glass, and discuss the differences in color, texture, composition, etc. Label and display each type. Which types would grow the best plants?

3. Let the children do the following experiment to observe the different particles found in soil: Fill a jar 2/3 full with water and finish filling with soil. Put the lid on and shake the jar. Let the soil settle for a day and observe the layers of sand, silt, and clay. Note particles which do not settle.

Career-oriented learning may take place in or out of school.
Educational Awareness

4. Invite an agronomist or agricultural extension service agent to the classroom to demonstrate a soil test kit. Bring in some clay, loam, sand, fertilizer, and lime. Help the children pulverize the soils. Let them help test each type of soil and correct any differences by adding fertilizer and/or lime. All necessary directions are included in the kit. Ask the children to think about themselves in relationship to this activity. Did they enjoy performing the test? Were they especially skilled at doing this kind of work? Did they like getting their hands dirty?

The school can provide an opportunity to enhance self-development.
Self-Development

5. Give the children the following problem to solve:

> A farmer is worried about saving the soil on his land. With each rain, more soil is carried away with the water that is running off. What can he do?

Discuss how they might find the answer. Give them a day or two to get a solution in any manner possible. Discuss and evaluate the solutions. Ask each child how he arrived at his solution. Did he enjoy solving this problem? Why or why not?

The school can provide an opportunity to enhance self-development.
Self-Development

6. Do the following two experiments after completing activity number 5:

a. Fill two flats with soil. Place one flat so that it is sloping while letting the other remain flat. Sprinkle equal amounts of water on both until water run-off is noticed. In which flat does the run-off occur? Does any soil run off?

b. Plant a dense stand or rye in one flat of soil. In about two weeks the rye should be ready for the experiment. Using the flat with rye and one with bare soil, place both flats so that they are sloping. Sprinkle equal amounts of water on both. Observe run-off and draw conclusions. Try the experiment again with both flats remaining flat.

Career-oriented learning may take place in or out of school.
Educational Awareness

7. Take a field trip to see soil conservation in practice.

Career-oriented learning may take place in or out of school.
Educational Awareness

8. Have the class bring in seeds of many kinds. If possible, each child should know from what plant his seeds were obtained and bring in a sample of the plant. Label a sample of each kind of seed for display. Discuss how the agronomist works with seeds to find out which will produce the best plants. Make a list of characteristics he looks for to determine the quality of seeds, such as color, shape, presence of mildew and damage. Give each child some seeds and let him examine them and separate them into two groups - those of poor quality and those of good quality.

Career-oriented learning may take place in or out of school.
Educational Awareness

9. Tell the children what the word "germination" means. Help them find pictures in encyclopedias of germinating seeds. Give ample time for examining the pictures. Soak some large lima bean seeds in water for a day. Let each child open a seed to view the embryo inside. Discuss what happens if the seed does not germinate.

Career-oriented learning may take place in or out of school.
Educational Awareness

10. Do some control experiments to show that many factors such as types of soil, fertilizers, quality of seeds, amount of sunlight, and water affect germination and/or the quality of plants grown. After giving directions, let groups of children take the responsibility for performing the following experiments correctly:

a. Plant seeds of the same type and quality in different types of soil to see which soil grows the best plants.

b. Perform this experiment with the class. Plant seeds of identical types and quality in two pots filled with poor soil. Apply fertilizer to one pot of soil. Observe the affect of fertilizer on plant growth.

c. Make two identical plantings of seeds. Water one planting properly, but do not water the other. Observe the affect of water upon plants.

d. Make two identical plantings of seeds. Deprive one planting of sunlight to observe its affect upon plants.

e. Let the students suggest some experiments to do.

Work involves the acceptance of responsibility for a task.
Attitudes and Appreciations

11. Let the children observe germination of seeds by using various kinds of seeds (such as lima beans, soybeans, and corn), a glass, blotting paper, and wet sand. Soak some seeds overnight. Cut the piece of colored blotting paper as wide as the glass is high. Roll it, and slip it down into the glass. Then fill the glass with damp sand. Slip several seeds down between the glass and the blotting paper. Keep the sand moist until the seeds germinate. Ask the children to note the differences in the time it takes various seeds to germinate. Let the children identify the three parts of the plant -- root, stem, and leaves.

Career-oriented learning may take place in or out of school.
Educational Awareness

12. Plant some bean seeds, being sure to keep a record of how many seeds were planted and how long it took the seedlings to appear above the soil. When all the seeds which will germinate have come up, count the number of plants and write the ratio of seeds planted and plants which have appeared, such as three out of six.

Career-oriented learning may take place in or out of school.
Educational Awareness

13. Perform a long-term experiment with the class. Obtain two different kinds of corn which will mature at the same time. Plant alternate rows of each kind. As soon as the corn tassels, cut all the tassels off of one kind. (This must be done as soon as possible.) Observe that both kinds of corn plants grow an ear with corn on it. Discuss the fact that hybrids are produced when pollen from one kind of plant falls on the silks of another kind. It would be of interest to cover the silk of one plant with a plastic bag so that no pollen can reach it. Note what happens.

Career-oriented learning may take place in or out of school.
Educational Awareness

14. Discuss with the students how some plants can grow without soil (hydroponics). Why? Have the students work experiments involving this principle. "Nature's Windows," which can be bought in most 5¢/10¢ stores, could be used. (The St. Louis Zoo has a hydroponics exhibit where plants are grown to feed to some of the animals.)

Work involves the acceptance of responsibility for a task.
Attitudes and Appreciations

15. Have the class dig up a small plot of ground in the school yard or ask the children to do this at home. Look for any insects or animals in the soil such as worms, grubs, snails, insects, spiders, mites, ticks, etc. Read about each kind found to see if it is helpful or harmful to the soil and plant life. If none are found, the teacher will need to suggest the names. Write an experience chart telling

Occupations have their own work settings.
Career Information

about this activity, especially describing the setting. Does an agronomist ever work out-of-doors? When?

16. Show pictures of weeds and ask the children to give ideas as to why weeds are unwanted. Take a walk around the schoolyard looking for weeds. Pull a variety of weeds to take back to the classroom. Identify the weeds. Let the children compare their method of weed identification and their work setting to that of the agronomist. Does he work with weed control? Why might the farmer need the help of an agronomist?

Occupations have their own work settings.

Career Information

17. Display a map of the U. S. which has pictures of the products produced in each state. Such a map is often found in encyclopedias. Have the children examine their state especially. Ask the children to name the field crop plants that they have seen growing and make a list of those named. Decide if they know why certain plants grow only in certain areas. If they do not know, who might be able to tell them? Does an agronomist give suggestions to people? Does he need a particular personality to be able to talk with people?

The school can provide an opportunity to enhance self-development.

Self-Development

18. Show some different types of maps and state the purpose of each. Tell the children about soil maps which are made by agronomists. Show a soil map and talk about its uses. Discuss how an agronomist makes a soil map and where this type of work is done. Ask the children if they would enjoy making a soil map. Let any who are especially interested in maps make a map of the schoolyard.

Occupations have their own work settings.

Career Information

EVALUATION ACTIVITIES

Make a large wall chart about the agronomist with the following headings:

- Occupation
- Duties
- Personal Qualities
- Work Setting
- Knowledge and Skills Needed

Explain the meaning of each heading and have the children help fill in the chart. Give each child an opportunity to tell why he would or would not like to be an agronomist.

The school can provide an opportunity to enhance self-development.

Self-Development

Work involves the acceptance of responsibility for a task.

Attitudes and Appreciations

Occupations have their own work settings.

Career Information

Career-oriented learning may take place in or out of school.

Educational Awareness

RESOURCES

Books

Goldin, Augusta. Where Does Your Garden Grow? Crowell, 1967. illus.

Govoni, Ilse Hayes and Dorothy Hall Smith. Poems To Read and To Learn, "Mud." Golden Press, N. Y., 1955.

Heady, Eleanor B. The Soil That Feeds Us. Parents Magazine Press, 1972. illus.

Hughes, Harold D. and Darrel S. Metcalfe. Crop Production. The McMillan Co., New York, 1972.

Matthews, William H. Soils. Watts, 1970. illus.

Syrocki, B. John. What Is Soil? Beckley-Cardy Company, Chicago, Illinois, 1961.

Hungry Soil. John Deere, Moline, Illinois.

Soil: Acidity, Moisture, Minerals and Organisms. National Wildlife Federation, 1412 16th Street, N. W., Washington, D. C. 20036.

Teaching Soil and Water Conservation, A Classroom and Field Guide. U. S. Department of Agriculture, Soil Conservation Service, Washington, D. C.

Audio-Visuals

Learning About Conservation. Coronet Films. Filmstrip.

Free Materials

Educators Guide to Free Science Materials. Educators Progress Service, Incorporated, Randolph, Wisconsin, 1970.

Printed Materials

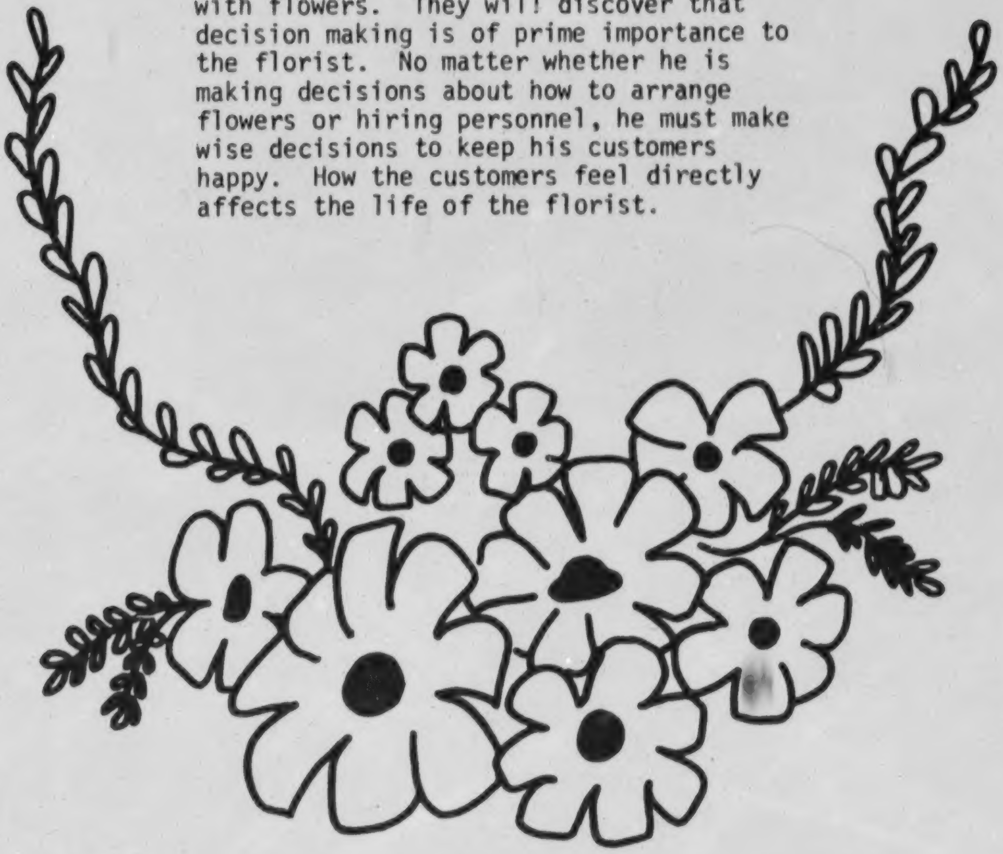
1. Outline for Teaching Conservation in Elementary Schools PA-268, U. S. Department of Agriculture, Soil Conservation Service.
2. Soil Means Life, National Wildlife Federation.
3. Study of Soil Science, A. LaMotte Chemical Products Company.
4. Teaching Soil and Water Conservation PA-341, U. S. Department of Agriculture, Soil Conservation Service.

General Soil Map can be obtained from the Soil and Water Conservation District Association.

Major Career Development Dimension
DECISION MAKING

Occupational Study
FLORIST

Springtime and children bring flowers. You can probably recall the time when a flower was presented to you from a small fist followed by, "I found it in the woods" or "I found it in Mommy's flower bed." With such a natural interest in flowers, primary level children would enjoy learning about a person who works with flowers. They will discover that decision making is of prime importance to the florist. No matter whether he is making decisions about how to arrange flowers or hiring personnel, he must make wise decisions to keep his customers happy. How the customers feel directly affects the life of the florist.



BEFORE YOU BEGIN

The occupational area considered in this study is that of ORNAMENTAL HORTICULTURE. The occupations in this area are involved in the culture, production, and maintenance of plants and in the establishment, maintenance, and management of Ornamental Horticulture enterprises.

This unit deals with floriculture, which is one aspect of the area of ORNAMENTAL HORTICULTURE. It considers the cultivation and management of ornamental and flowering plants; the purchasing of flowers, plants, and supplies; the arranging of flowers and plants; and the selling and delivering of them. Concurrently, an awareness of the occupation of FLORIST is developed.

The developmental CAREER DEVELOPMENT DIMENSION for this particular study is DECISION MAKING. The concept *an individual's decisions affect himself and others* seems appropriate to the study of a florist since most of the duties of a florist involve making decisions. If unwise decisions are made, customers are dissatisfied, and the florist may be affected emotionally and financially.

The other concepts in this study are of an interacting nature. The student should begin to understand that *work involves the acceptance of responsibility for a task,* that *occupations require the use of specific materials and equipment,* and that *knowledge and skills in subject areas are helpful in occupational competence.*

Subject matter which is fused in the activities is listed so that the teacher might identify some of the educational knowledge and skills necessary to research and/or perform a particular occupational task during this study and/or on the job. The subject matter used is at or below the grade for which the module is written.

The occupational information given is intended to give the teacher a brief overview of some of the tasks and requirements of a person in this particular occupation. At the end of each module a list of resources is given for additional information.

Pupil performance objectives are written for each of the career development concepts. For the acquisition of those objectives, subject matter and occupational information relevant to the level of the child's development are used. The objectives contain only a statement of terminal behavior.

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. The teacher may wish to use some of the activities for the whole class, and others may be delegated to small groups or individuals. These activities form a nucleus around which interest can be stirred for the child and around which the teacher will want to develop additional activities.

The evaluation activities suggest various ways to evaluate the child's level of conceptualization of the career development concepts as they are stated in the pupil performance objectives. Because the classroom teacher is the best qualified evaluator in her classroom, she should decide HOW a given knowledge or skill shall be demonstrated, and the QUALITY and QUANTITY of knowledge or skill required for a particular child or group of children. The writers of these materials have also made the assumption that the teacher will decide whether she uses all or some of the suggested activities or some activities which she adds to the unit. These factors will affect the pupil evaluations.

CAREER DEVELOPMENT CONCEPTS

DECISION MAKING

Major Concept	Life involves a series of choices leading to career commitments.
Subconcept	*An individual's decisions affect himself and others.*

ATTITUDES AND APPRECIATION

Major Concept	Society is dependent upon the productive work of individuals.
Subconcept	*Work involves the acceptance of responsibility for a task.*

CAREER INFORMATION

Major Concept	Basic career information will aid in making career-related decisions.
Subconcept	*Occupations require the use of specific materials and equipment.*

EDUCATIONAL AWARENESS

Major Concept	Educational skills and experiences are related to the achievement of career goals.
Subconcept	*Knowledge and skills in subject areas are helpful in occupational competence.*

INFUSED SUBJECT MATTER

Mathematics

1. Calendar information
2. Counting
3. Coins
4. Charts

Language Arts
1. Interviewing
2. Reading for information
3. Use of cassettes for recording
4. Listing
5. Role playing
6. Seasons
7. Listening skills

Science
1. Identification of plants
2. Scientific observation
3. Plants dependent on sun for light and growth
4. Seasons
5. Plants' need for water

Social Studies
1. Comparison of job functions of workers
2. Community helpers
3. Natural resources and man's utilization of them

OCCUPATIONAL INFORMATION

Ornamental Horticulture

Ornamental Horticulture deals with the culture, production, and maintenance of plants; the establishment, maintenance, and management of Ornamental Horticulture enterprises; the principles and practices involved in locating, planting, and maintaining turf, plants, and shrubs; and the selection and placement of nonliving materials for the beautification of the indoor and outdoor environment.

Sample Occupation: A Florist

. . . has knowledge of flowers and plants.
. . . grows his own plants often.
. . . arranges flowers.
. . . is a skilled business man.
. . . has artistic talents.
. . . sells flowers to customers.
. . . advertises his flowers.
. . . buys flowers from the wholesaler.
. . . designs arrangements.
. . . has a pleasant personality.
. . . has a pleasant smile and meets the public well.
. . . can be owner, manager, and operator of a flower shop.
. . . hires staff.
. . . supervises staff.
. . . keeps records of income and expenditures.
. . . lectures or gives demonstrations of floral art.
. . . is deeply involved with emotion or sentiment.
. . . works longer and harder during rush time.

PUPIL PERFORMANCE OBJECTIVES

DECISION MAKING

. . . list a number of decisions that a florist must make and tell how each decision might affect the florist, his staff and/or his customers.

ATTITUDES AND APPRECIATIONS

. . . name some of the special occasions which cause a rush at a florist shop. Tell what might happen on each occasion if some employee did not accept responsibility for his particular task.

CAREER INFORMATION

. . . look at the materials and equipment or at pictures of the materials and equipment used by a florist and name each.

EDUCATIONAL AWARENESS

. . . name some of the things a florist must know in order to buy and arrange flowers which are pleasing to the customer.

INSTRUCTIONAL ACTIVITIES

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. Use discretion as to which activities to use for the whole class and which can be delegated to small groups or individuals to be shared with the class at a later time. Develop additional activities which can add to the child's understanding of this unit.

ACTIVITIES to develop the	CAREER DEVELOPMENT CONCEPTS
1. Ask the students to tell ways plants are useful to them in their day-to-day living. Have them draw a picture showing the ways in which they make use of plants in their environment.	*Knowledge and skills in subject areas are helpful in occupational competence.* **Educational Awareness**
2. Have the students plant a terrarium. This could be done as a group or as individuals. Ask the cafeteria to save large jars for this project.	*Knowledge and skills in subject areas are helpful in occupational competence.* **Educational Awareness**
3. Ask the students to name ways in which flowers are used. How can the florist be helpful to someone who needs flowers?	*Work involves the acceptance of responsibility for a task.* **Attitudes and Appreciations**

4. Tell the class the history of flower shops. Discuss with them the ways in which flowers were used originally in different cultures i.e., Greek Gods - garlands, Japanese - gardens, Oriental - flower arranging.	*Knowledge and skills in subject areas are helpful in occupational competence.* **Educational Awareness**
5. Have class members role play a clerk and a customer ordering flowers.	*Work involves the acceptance of responsibility for a task.* **Attitudes and Appreciations**
6. Discuss with the students the importance of getting fresh flowers to the customer. Investigate the ways of transporting fresh flowers.	*Occupations require the use of specific materials and equipment.* **Career Information**
7. Have the students name the occasions on which people send fresh flowers.	*Knowledge and skills in subject areas are helpful in occupational competence.* **Educational Awareness**
8. Have a group make a chart showing the cost of a variety of floral arrangements. Use the F.T.D. (Florist Telegraph Delivery) service brochure from a local florist shop.	*Knowledge and skills in subject areas are helpful in occupational competence.* **Educational Awareness**
9. Arrange a field trip to a local florist shop. Ask the florist to tell the students why he decided to become a florist. What does he like and dislike about his job? What are the most often used flowers? For what purpose are they used? What things did he study in school that he uses in his job? What does he do that affects other people? Try to arrange to visit two or more shops to obtain a variety of answers. Record this on a cassette and discuss with the students upon returning to the classroom.	*An individual's decisions affect himself and others.* **Decision Making** *Knowledge and skills in subject areas are helpful in occupational competence.* **Educational Awareness**
10. Have the students place a potted plant out of the sunlight in a dark room for a few days. Observe the changes in growth and leaf color caused by a lack of sunlight. Discuss the reasons for this to occur.	*Knowledge and skills in subject areas are helpful in occupational competence.* **Educational Awareness**

11. Have a florist come to the classroom. Ask him to bring some of the materials and tools which he uses. Ask him to explain how each is used. Let the children handle the materials and tools.	*Occupations require the use of specific materials and equipment.* Career Information
12. Have the students use magazine pictures to make posters showing uses of flowers; i.e., weddings, centerpieces, funerals, corsages.	*Knowledge and skills in subject areas are helpful in occupational competence.* Educational Awareness
13. Show the children different flowers, ferns, and plants that are generally sold in florists' shops. Help them distinguish these.	*Knowledge and skills in subject areas are helpful in occupational competence.* Educational Awareness
14. Ask the children to tell personal experiences relating to the use of flowers. How did they decide which flowers to use or where to get them? Why did they send them and to whom?	*An individual's decisions affect himself and others.* Decision Making
15. Force-bloom branches of spring flowering trees or shrubs. Relate this to the way the florist is able to present out-of-season flowers to his customers.	*An individual's decisions affect himself and others.* Decision Making
16. Discuss with the children the term "Say it with flowers." What does it mean; why do we say it?	*An individual's decisions affect himself and others.* Decision Making
17. What do we mean by the term "green thumb"? Discuss this with the children. Show some healthy plants to illustrate the meaning of the term.	*Knowledge and skills in subject areas are helpful in occupational competence.* Educational Awareness
18. Set up a florist shop in the classroom and have each student portray a role of a particular worker in a floral shop.	*Work involves the acceptance of responsibility for a task.* Attitudes and Appreciations
19. Have the children work together to make a list of personality characteristics that would be valuable to a florist in his contact with people.	*An individual's decisions affect himself and others.* Decision Making

20. Have a supply of artificial flowers in the classroom. Let the students choose ones they would like to use in an arrangement, and let them make an arrangement with the flowers they have chosen. Discuss the advantages of artificial flowers over fresh flowers for decorative purposes. Which do they like best? Use magazine pictures to illustrate different arrangements or the book listed in the resource section on Flower Arranging -- A Fascinating Hobby. What other kinds of items could be used with the flowers for an arrangement?

Occupations require the use of specific materials and equipment.
Career Information

21. Ask students to help develop a vocabulary list relating to the occupation of a florist. Define any of the words the children do not understand.

Knowledge and skills in subject areas are helpful in occupational competence.
Educational Awareness

22. Have the class cut out different shaped and different colored vases from construction paper. Draw and cut out different varieties of flowers to fit into these vases. Straws, wires, pipe cleaners, or string may be used for the stems on the flowers.

Occupations require the use of specific materials and equipment.
Career Information

23. Ask the class to plant some paper-white narcissus bulbs (or other bulbs) in pebbles and water. Watch to see how long it takes them to bloom.

Knowledge and skills in subject areas are helpful in occupational competence.
Educational Awareness

24. Have students plant some flower seeds in an indoor garden in order to grow plants. Propagate some ivy or other vine cuttings to observe the rooting process. What responsibilities are involved in caring for these plants so they will remain alive and healthy? Keep growth records and make comparisons.

Work involves the acceptance of responsibility for a task.
Attitudes and Appreciations

25. Have the students construct a mobile using pictures or cutouts of items important to a florist.

Occupations require the use of specific materials and equipment.
Career Information

26. Have the students simulate a deliveryman delivering a bouquet to a customer.

Work involves the acceptance of responsibility for a task.
Attitudes and Appreciations

EVALUATION ACTIVITIES

1. Have the children role play a florist involved in a number or duties. Let them tell what decisions were made while performing each duty and what would have happened if an unwise decision had been made.

An individual's decisions affect himself and others.
Decision Making

2. Have the children organize a short play entitled "The Day Nothing Went Right at the Florist Shop." Let them portray problems caused by employees not accepting responsibilities for their duties.

Work involves the acceptance of responsibility for a task.
Attitudes and Appreciations

3. Have the children draw pictures of materials and equipment used in a florist shop.

Occupations require the use of specific materials and equipment.
Career Information

4. Have the children list some of the things a florist needs to know about money, the seasons, planting techniques, etc. Have them explain how the florist uses such skill or knowledge while on the job.

Knowledge and skills in subject areas are helpful in occupational competence.
Educational Awareness

RESOURCES

Books

Bulla, Clyde Robert. Flowerpot Gardens. Thomas Y. Crowell Company, New York, N. Y., 1967.

Burroughs, Laura Lee. Flower Arranging -- A Fascinating Hobby. Coca Cola Company, Dept. E, Atlanta, Georgia.

Cutler, Katherine N. Junior Flower Arranging. Barrows, 1954. 179 p. illus. (4-7).

Raskin, Edith. The Fantastic Cactus : Indoors and in Nature. Lathrop, Lee and Shepherd Company, New York, N. Y., 1968.

Plants in the Classroom, An Environmental Investigation. National Wildlife Federation, Minnesota Environmental Sciences Foundationa, Inc., 5400 Glenwood Avenue, Minneapolis, Minnesota 55422.

Audio-Visuals

How Green Plants Make Food - Photosynthesis. Universal Education and Visual Arts, 1961. Film.

Let's Watch Plants Grow. Coronet Films, 1962. Film.

The Miracle of the Bulb. Films of the Nations. Film.

The Wonderful Words of Flowers. Society of American Florists, Sheraton-Park Hotel, Washington, D. C. 20008.

Free Materials

Educators Guide to Free Science Materials. Educators Progress Service, Incorporated, Randolph, Wisconsin, 1970.

Printed Materials

1. The Story of Pollination, The A. I. Root Company

Audio-Visuals

1. Begonias, Belgian Embassy. Film.
2. Garden Notebook, Eastman Kodak Company. Film.
3. The Gift of the Rose, Roses, Incorporated. Film.
4. Johnny Rose, Roses, Incoporated. Film.
5. Miracle of Flowers, Joe E. Sanders. Film.
6. Of Lines and Flowers, Smithers Oasis. Film
7. To Say It Best, Modern Talking Picture Service. Film.
8. What's Behind a Rose, Roses, Incorporated. Film.

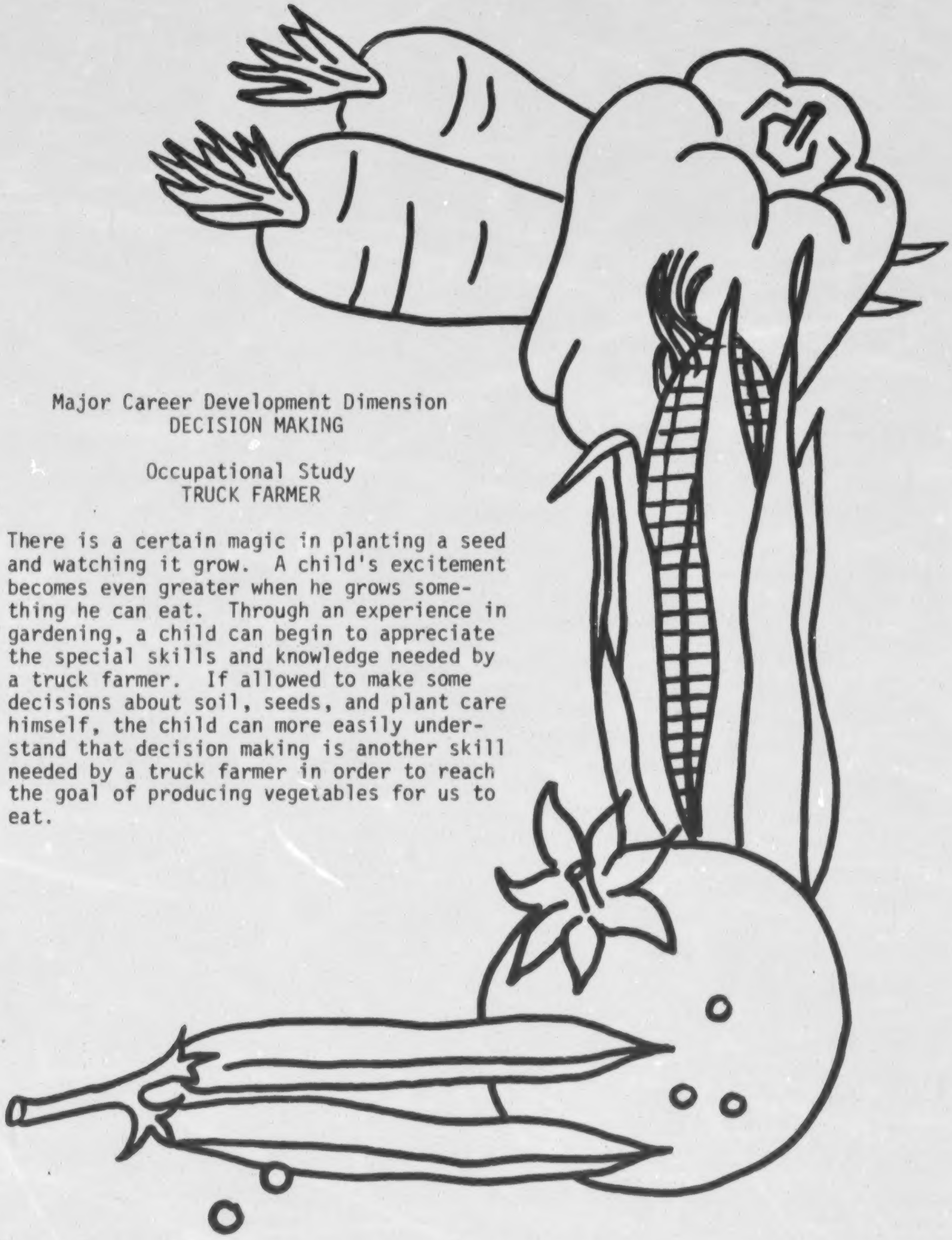
Kit

1. Punch 'N Gro Kit, Northrup King and Company

Organizations

The Florists Transworld Delivery Association International Headquarters, 900 West Lafayette, Detroit, Michigan.

The Society of American Florists, Sheraton-Park Hotel, Washington, D. C. 20008.



Major Career Development Dimension
DECISION MAKING

Occupational Study
TRUCK FARMER

There is a certain magic in planting a seed and watching it grow. A child's excitement becomes even greater when he grows something he can eat. Through an experience in gardening, a child can begin to appreciate the special skills and knowledge needed by a truck farmer. If allowed to make some decisions about soil, seeds, and plant care himself, the child can more easily understand that decision making is another skill needed by a truck farmer in order to reach the goal of producing vegetables for us to eat.

BEFORE YOU BEGIN

The occupational area considered in this study is that of AGRICULTURAL PRODUCTION. The occupations in this area are concerned with the growing of crops or raising of livestock for the purpose of increasing the quantity of quality products and offering those crops, livestock, or products for sale.

This unit deals with the growing and marketing of vegetables, which is an important part of supplying food for the people of the world. At the same time, an awareness of the occupation of TRUCK FARMER is developed.

The developmental CAREER DEVELOPMENT DIMENSION for this particular study is that of DECISION MAKING. The subconcept *an individual should consider alternative ways to reach a given goal* is ideal to use in the study of growing and marketing vegetables. The location of a truck farm and the climate found there may influence growing and marketing procedures, but the given goal can still be reached even though variations in procedures are necessary.

The other concepts are of an interacting nature in this study. The student should begin to understand that *specialized occupations result in an interdependent society*, that *occupations require special personal characteristics*, and that *learning is a lifelong process*.

Subject matter which is fused in the activities is listed so that the teacher might identify some of the educational knowledge and skills necessary to research and/or perform a particular occupational task during this study and/or on the job. The subject matter used is at or below the grade for which the module is written.

The occupational information given is intended to give the teacher a brief overview of some of the tasks and requirements of a person in this particular occupation. At the end of each module, a list of resources is given for additional information.

Pupil performance objectives are written for each of the career development concepts. For the acquisition of those objectives, subject matter and occupational information relevant to the level of the child's development are used. The objectives contain only a statement of terminal behavior.

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. The teacher may wish to use some of the activities for the whole class, and others may be delegated to small groups or individuals. These activities form a nucleus around which interest can be stirred for the child and around which the teacher will want to develop additional activities.

The evaluation activities suggest various ways to evaluate the child's level of conceptualization of the career development concepts as they are

stated in the pupil performance objectives. Because the classroom teacher is the best qualified evaluator in her classroom, she should decide HOW a given knowledge or skill shall be demonstrated, and the QUALITY and QUANTITY of knowledge or skill required for a particular child or group of children. The writers of these materials have also made the assumption that the teacher will decide whether she uses all or some of the suggested activities or some activities which she adds to the unit. These factors will affect the pupil evaluations.

CAREER DEVELOPMENT CONCEPTS

DECISION MAKING

Major Concept	Basic components of the decision-making process can be applied to the establishing of personal goals and the making of career-related decisions.
Subconcept	*An individual should consider alternative ways to reach a given goal.*

ATTITUDES AND APPRECIATIONS

Major Concept	Society is dependent upon the productive work of individuals.
Subconcept	*Specialized occupations result in an interdependent society.*

CAREER INFORMATION

Major Concept	Basic career information will aid in making career-related decisions.
Subconcept	*Occupations require special personal characteristics.*

EDUCATIONAL AWARENESS

Major Concept	Educational skills and experiences are related to the achievement of career goals.
Subconcept	*Learning is a lifelong process.*

INFUSED SUBJECT MATTER

Mathematics
1. Dry measure
2. Calendar
3. Money
4. Dozen, half-dozen
5. Bar graphs
6. Comparisons

Language Arts
1. Role playing
2. Story writing
3. Story telling
4. Interviews
5. Letter writing - placing orders

Science
1. Needs of plants for food and water
2. Seasons
3. Identification of plants
4. Insects

Social Studies
1. Comparison of job functions of workers
2. Dependence of one job on another
3. Maps
4. Transportation
5. Natural resources

OCCUPATIONAL INFORMATION

Agricultural Production

Agricultural production is the growing of crops or raising of livestock for the purpose of increasing the quantity of quality products and offering those crops, livestock, or products for sale. High agricultural production requires people with a high degree of knowledge and skill in the plant or animal sciences and/or business management.

Sample occupation - A Truck Farmer:

. . . raises and sells vegetables.
. . . grows many different types of vegetables or specializes in raising only one kind.
. . . is familiar with various plant destroyers.
. . . knows the special requirements of each vegetable.
. . . knows how to prepare the soil and how to plant or transplant the crops.
. . . knows how to cultivate and care for each separate crop of vegetables.
. . . knows what fertilizers are needed.
. . . knows in what kinds of soil and in what climate each kind of vegetable grows best.
. . . knows when each kind of vegetable has reached its most edible stage in order to harvest at the right time.
. . . can live in nearly any state in the U. S.
. . . uses greenhouses if he lives in cold climates and farms year-round.
. . . markets the vegetables fresh or sells them to processing plants for canning or freezing.
. . . knows about quick-freezing processes.
. . . has high school education and may have advanced education.

PUPIL PERFORMANCE OBJECTIVES

DECISION MAKING

. . . role play a truck farmer marketing his vegetables in different ways.

. . . tell how the weather can change the way the truck farmer must grow his crops.

ATTITUDES AND APPRECIATIONS

. . . draw pictures of the workers who help the truck farmer in planting, harvesting, or marketing the vegetables.

CAREER INFORMATION

. . . name some of the things that a truck farmer can do which are not required of other workers.

EDUCATIONAL AWARENESS

. . . state an important reason why workers must keep learning while working at their job.

INSTRUCTIONAL ACTIVITIES

1. Place orders for various seed catalogues. When they arrive, let the children examine all kinds of vegetables, especially noting the plant structure as well as the vegetable. Have them cut pictures of the plants and their vegetables from the catalogues to use for a bulletin board display and label each. Then have a student wrap a sample of the seeds of each vegetable in cellophane and pin to the bulletin board next to the pictures. Also put actual vegetables on display if possible.

Learning is a lifelong process.
Educational Awareness

2. Have the class collect a variety of vegetable seed packages. Help the children read the directions on the packages and discuss the germination periods and the depth of planting. Talk about why there are differences. Follow this by planting some of the seeds with the class and comparing the time it takes for each plant to come up with

Learning is a lifelong process.
Educational Awareness

that found on the package. Bring in the idea that scientists are continually studying ways to improve plants and that germination periods may be changed.

3. Using small containers, such as plastic margarine cartons, let the children make a display of the various vegetable seeds, and help them label each. The display should be on a low shelf so that the children can feel the seeds and observe and compare differences in size, shape, and color. Later, the children may wish to see how many seeds they can identify without the use of labels.

Learning is a lifelong process.
Educational Awareness

4. Invite a successful gardener to visit the classroom. The following questions could be asked:

An individual should consider alternative ways to reach a given goal.
Decision Making
Occupations require special personal characteristics.
Career Information

a. How do you get your garden ready?
b. What plants do you grow?
c. Why did you choose those particular vegetables to grow?
d. How did you plant each type of vegetable?
e. How did you determine the placement of each row in the garden and what plants go in each row?
f. How do you care for the garden?
g. What pests bother your garden?
h. How do you harvest each vegetable?
i. What do you do with the vegetables?
j. What happens to the plant after it has stopped bearing?
k. What happens to the garden in the winter?

A number of visits to his garden in planting, growing, and harvesting seasons would be an important ongoing study.

5. Take a trip to a local hothouse to view plants that are being grown and talk with the hothouse personnel. Use a tape recorder to record answers to questions such as

a. How is each kind of plant started?
b. What is the cost of each plant?
c. Why do some plants cost more than others?
d. Who buys the vegetable plants?
e. Are there truck farmers who buy the plants?

Upon returning to the classroom, allow ample time for discussion. Be sure to talk about the interdependence of the hothouse personnel and gardeners. Try to find out if truck farmers buy plants from a hothouse or start their own. Let the children write a story with an illustration about their visit to be bound into a class book.

Specialized occupations result in an interdependent society.
Attitudes and Appreciations

6. Show pictures, charts, or posters of different classes of vegetables such as root, bulb, tuber, stalk and stem, leaf, bud and flower, fruit, and seed. Let each child decide about which class of vegetable he would like to learn, and divide the class into groups accordingly. Let each group do some of the following activities, but relate the activities specifically to their vegetable; i.e., in a trip to the store, one group would check on tomatoes, another on celery, etc.:

a. Using a vegetable garden guide from a Cooperative Extension Service in the state, find out which vegetables can be successfully grown in the area. (Most vegetables can be started indoors with success.) Begin to make plans for obtaining seeds or plants for a classroom project.

An individual should consider alternative ways to reach a given goal.
Decision Making
Specialized occupations result in an interdependent society.
Attitudes and Appreciations
Occupations require special personal characteristics.
Career Information
Learning is a lifelong process.
Educational Awareness

b. Ask the students to bring samples of each of the different vegetables being studied to the classroom. If more than one sample of the same vegetable is displayed, compare the visible quality of each, and discuss with the class why it is different. Also, discuss why the truck farmer is concerned with the quality of the vegetables he produces and how he acts upon this concern. Clean and prepare each vegetable for eating. Share them with the whole class so that each child may have an opportunity to taste vegetables new to him. A hotplate would be convenient for preparing the vegetables which need to be cooked.

c. Take a trip to the supermarket, and visit the produce department. Ask the produce person where each type of vegetable is obtained and what type of transportation is used to get it to the supermarket. Keep a record of the above information so that places may be located on a map at a later time. Also keep a record of the prices of each.

d. Have a group make a mural of the story of a vegetable from its beginning as a seed to its being placed on someone's table to be eaten. Compare the mural with those of other groups to see how the marketing and transporting of the vegetables differ. Note the workers involved.

e. Ask a group to do the following: Make a planting of the particular vegetable chosen to study. If it can be planted in different ways, try at least two ways (i.e., plant both onion seeds and onion sets). Keep records of costs of the seeds, sets, etc., and of growth. Use this data for graphing, charting, and comparing. Pay particular attention to the number of days it took for plants started in different ways to mature. Compare the costs and draw conclusions as to why costs differ.

f. Look in the vegetable garden guide, an encyclopedia, book, or pamphlet to find out what insects attack the vegetables studied. Collect or draw pictures of these insects. Make a bulletin board display of the pictures and include pictures of the particular plant that each insect attacks. Try to find out the different methods of controlling insects and the best way of controlling the insects studied. Are any of these methods new? How would a truck farmer learn of the newer methods?

g. Using product maps found in many encyclopedias, show where the various vegetables are grown. Make a large map of the U. S. with the states outlined. Put a small picture of each vegetable in the proper state on the map. Talk about the different ways the vegetables could be transported to other parts of the U. S. How would different methods of available transportation affect a truck farmer's life? How are vegetables kept from spoiling if they must travel a great distance?

7. A truck farmer knows all about plant growth and the requirements or conditions needed for this growth. By doing some of the following experiments, children may see the truck farmer as a very knowledgeable person with many special abilities:

An individual should consider alternative ways to reach a given goal.

Decision Making

Specialized occupations result in an interdependent society.

Attitudes and Appreciations

Occupations require special personal characteristics.

Career Information

a. To observe plant growth, plant a bean seed in cotton between two pieces of glass being sure to keep the cotton moist. Observe the seed carefully everyday, and make a careful drawing when the root and stem first appear. Observe the seed each day, and add to the drawings the new growth by using another color. The drawing is a record of the growth which takes place each day. Note that when all food stored in the bean is used, the plant will die.

b. To show that plants get minerals through their roots, plant bean seeds close to the sides in two glasses. Fill one with cotton and the other with black soil. Keep the seeds watered for several weeks, and note that both plants grow at first. Observe both plants several days later. Note that the plants in the cotton will die because there are no minerals in the cotton.

c. To show that some soils are better for plants than others, obtain six flower pots and fill three with three kinds of soil (clay, sand, and loam). Fill the three remaining pots with each of the three soils mixed with humus. Plant bean seeds in each pot and water. After a few days, the bean plants will appear. In several weeks differences in soil will be evident. Discuss how the soil affects a truck farmer's life. A discussion of the use of fertilizers would be appropriate at this time.

d. To show that plants need sunlight and water, plant a bean seed in each of four pots. Label the pots A, B, C, and D. Place pots A and B in the sunlight and pots C and D in a dark closet, and water all frequently. When plants appear, water only Plants A and C. Note what happens to the plants in pots B, C, and D. Discuss weather conditions which affect the life of a truck farmer. Point out how irrigation might be used on a truck farm.

e. To grow a stem plant, cut off a piece of potato with two or three buds on it. Plant it in a flower pot about three inches below the surface of the soil, and water regularly.

f. To grow a plant from a bulb, set an onion in a glass of water so that only the bottom will keep wet. New white roots will come out from the bottom of the bulb.

8. Give the children some time to make up a story entitled "I Am A *(name of a vegetable)* Seed" to be told to the class. Encourage each child to tell what happens to him and how he feels while underground waiting to sprout, while growing, bearing vegetables, and being sold. The story could include how he was cared for by the gardener or truck farmer. Let each child draw pictures to be shown while telling the story.

Occupations require special personal characteristics.
Career Information

9. Discuss good garden plans with the class. Talk about such factors as the need for several rows of sweet corn to be planted together in order to get good pollination. Draw to scale a garden plot on a large sheet of paper. Reduce the number of feet to the same number of inches. Plan where each type of vegetable should be planted, and write it on the drawing. If a garden plot is available, plant a garden at the proper time using either hotbed plants or seeds. Care for the plants - watering, hoeing, weeding, etc. Collect and identify any insects found on the plants. Some plants may mature during the summer months, so let the children decide what arrangements need to be made for the harvesting of the vegetables. Others may be harvested in the fall when school has reopened.

Occupations require special personal characteristics.
Career Information

Learning is a lifelong process.
Educational Awareness

10. Have the children make cutouts of the various vegetables studied in the classroom. Also, make play money. Set up a vegetable stand and let the children buy vegetables using the record of prices obtained while visiting the supermarket. Talk about other ways of selling vegetables. In a situation where the children can grow and harvest their own vegetable garden, the real vegetables could be sold to parents, other classes, etc.

An individual should consider alternative ways to reach a given goal.
Decision Making

11. Tell the children about pest controls such as D.D.T. that may harm them and their world. Be sure to tell them some of the dangers involved in the use of such products. Mention regulations set by the government to control the use of dangerous pesticides. Draw the children into a discussion letting them tell how they feel about the use of products which may help them in some ways but harm them in others.

Learning is a lifelong process.
Educational Awareness

12. Have the children talk to some people who grow plants in a garden, tend a lawn, or grow flowers such as African violets. Ask them how they control insects which affect their plants. Let the children report to the class the information gathered and make a chart showing the various methods used to control plant pests.

An individual should consider alternative ways to reach a given goal.
Decision Making

13. Ask the children to think of alternate ways in which a gardener or truck farmer could prevent damage to his cabbage plants caused by the cabbage moth (i.e., cover the plant with a fine mesh of wire or nylon in order to prevent the moth from laying eggs on the plant, daily hand pick larvae from the plant, or dust the plant with an insecticide). Then have the children evaluate these ways by discussing the following questions:

a. Which is the easiest to do?
b. Which is the most expensive?
c. Which is the fastest acting?
d. Which is safest for humans?
e. Which gives the longest protection?
f. What kinds of precautions are necessary?

An individual should consider alternative ways to reach a given goal.
Decision Making
Learning is a lifelong process.
Educational Awareness

An experiment to control flies in the classroom might be planned by such methods as the following:

a. using a no-pest strip.
b. using a bug repellent (aerosol).
c. using a fly swatter.
d. keeping doors and windows closed.
e. using screens if possible.
f. keeping the room free of food particles (plan to leave some food in the room for a few days so that the difference can be observed).

Following the experiment, help the children make conclusions about fly-control methods by discussing the above questions again.

14. Let the children brainstorm the problems of a truck farmer. Also, ask them to give their ideas for solutions to such problems. Make a list of workers in other fields upon whom a truck farmer depends (i.e., entomologist). Let the children do simple research about these workers. Each child can then give an oral report about what each worker does and how he helps the truck farmer. (This would be a good time to learn an appreciation of the migrant worker.)

An individual should consider alternative ways to reach a given goal.
Decision Making

Specialized occupations result in an interdependent society.
Attitudes and Appreciations

Occupations require special personal characteristics.
Career Information

Learning is a lifelong process.
Educational Awareness

EVALUATION ACTIVITIES

1. Have the students make a list of some things that a truck farmer does in which he has a choice; i.e., where does he get his plants, which plants shall he grow, how shall he sell his produce? Discuss some alternative ways of transporting produce to market.

An individual should consider alternative ways to reach a given goal.
Decision Making

2. Discuss how a truck farmer might grow his crops differently in cold weather (hothouse) than in warm weather (open fields).

An individual should consider alternative ways to reach a given goal.
Decision Making

3. Divide the class into two, three, or four groups and let each group make pictures of the workers important to the life of a truck farmer and compare sets of pictures. Discuss the importance of each group of workers.	*Specialized occupations result in an interdependent society.* **Attitudes and Appreciations**
4. Let each student role play an activity of the truck farmer which he thinks he would enjoy doing if he were to choose that occupation.	*Occupations require special personal characteristics.* **Career Information**
5. Discuss each child's role-playing activity, and let the children decide if they think that particular job of the truck farmer requires a great deal of special skill and ability or is rather easy to do.	*Occupations require special personal characteristics.* **Career Information**
6. Have the students name some of the newer developments that a truck farmer would need to know and tell how he would learn about each; i.e., insect control, pollution, food preservation, changes in consumer wants (fresh summer vegetables in the winter - greener lettuce, larger peppers).	*Learning is a lifelong process.* **Educational Awareness**

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Major Career Development Dimension
COPING BEHAVIOR

Occupational Study
FOREST TECHNICIAN

Children at the primary level are very interested in forest life, animals and trees in particular. Building upon this interest, they can become aware of people who care for the forest which provides enjoyment and needs for man. This unit helps the child understand that, in order to continue having a variety of wildlife in our environment, man must cope with conservation rules and regulations.

BEFORE YOU BEGIN

The occupational area considered in this study is that of FORESTRY. The occupations in this area are concerned with managing and utilizing timber resources; breeding and raising game and wildlife; providing facilities for recreation; looking for grazing land; developing homes for wildlife; safeguarding water supplies; reproducing, protecting, and improving forests; and researching methods of keeping the land productive.

This unit deals with two aspects of the area of FORESTRY: recreation and the reproducing, protecting, and improving of forests while developing an awareness of the occupation of the FOREST TECHNICIAN.

The developmental CAREER DEVELOPMENT DIMENSION for this particular study is that of COPING BEHAVIOR. The concept that *a contribution to group effort can be made by demonstrating ability to both compromise and exercise influence in achievement of group goals* is easily identified through the needs of the forest owner and forest visitor. This study helps the children become aware of people who protect and improve the forest for the needs of man. The child will become acquainted with problems existing between the forest owner and the forest visitor, the importance of their working together, the ability to compromise when necessary, and the establishment of necessary rules so that both derive benefits from the forest.

The other concepts in this study are of an interacting nature. The student should begin to understand that *work involves the acceptance of responsibility for a task,* that *occupations require special personal characteristics* and that *knowledge and skills in subject areas are helpful in occupational competence.*

Subject matter which is fused in the activities is listed so that the teacher might identify some of the educational knowledge and skills necessary to research and/or perform a particular occupational task during this study and/or on the job. The subject matter used is at or below the grade for which the module is written.

The occupational information given is intended to give the teacher a brief overview of some of the tasks and requirements of a person in this particular occupation. At the end of each module, a list of resources is given for additional information.

Pupil performance objectives are written for each of the career development concepts. For the acquisition of those objectives, subject matter and occupational information relevant to the level of the child's development are used. The objectives contain only a statement of terminal behavior.

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. The teacher may wish to use some of the activities for the whole class, and others may be delegated to small groups or individuals. These activities form a nucleus around

which interest can be stirred for the child and around which the teacher will want to develop additional activities.

The evaluation activities suggest various ways to evaluate the child's level of conceptualization of the career development concepts as they are stated in the pupil performance objectives. Because the classroom teacher is the best qualified evaluator in her classroom, she should decide HOW a given knowledge or skill shall be demonstrated, and the QUALITY and QUANTITY of knowledge or skill required for a particular child or group of children. The writers of these materials have also made the assumption that the teacher will decide whether she uses all or some of the suggested activities or some activities which she adds to the unit. These factors will affect the pupil evaluations.

CAREER DEVELOPMENT CONCEPTS

COPING BEHAVIOR

Major Concept	Certain identifiable attitudes, values, and behaviors enable one to obtain, hold, and advance in a career.
Subconcept	*A contribution to group effort can be made by demonstrating ability to both compromise and exercise influence in achievement of group goals.*

ATTITUDES AND APPRECIATIONS

Major Concept	Society is dependent upon the productive work of individuals.
Subconcept	*Work involves the acceptance of responsibility for a task.*

CAREER INFORMATION

Major Concept	Basic career information will aid in making career-related decisions.
Subconcept	*Occupations require special personal characteristics.*

EDUCATIONAL AWARENESS

Major Concept	Educational skills and experiences are related to the achievement of career goals.
Subconcept	*Knowledge and skills in subject areas are helpful in occupational competence.*

INFUSED SUBJECT MATTER

- Mathematics
  1. Multiplication
  2. Fractions
  3. Measurements
- Language Arts
  1. Interviews
  2. Role playing
  3. Research
  4. Telephoning
- Science
  1. Gathering data
  2. Classification of animals and trees
- Social Studies
  1. Maps
  2. Community workers
  3. Ecology
  4. Interdependence of society

OCCUPATIONAL INFORMATION

Forestry

Forestry is the young and expanding profession of scientific management of forests, forest land, and their products in order to insure continuous production of goods and services. The occupations in this study are concerned with managing and utilizing timber resources; providing facilities for recreation; looking after grazing lands; developing homes for wildlife; safeguarding water supplies; reproducing, protecting, and improving forests; and researching methods of keeping the land productive.

Sample Occupation: A Forest Technician

. . . supervises a crew in measurements of trees.
. . . keeps records.
. . . marks timber for sale.
. . . submits recommendations on logging methods.
. . . locates future timber sales.
. . . uses aerial photographs.
. . . prepares inventory control reports.
. . . identifies area conditions.
. . . is involved in land management.
. . . is involved in various aspects of logging and sawmill work.
. . . researchs new uses for wood.
. . . finds ways to improve the established methods of planting and growing trees and of producing timber and pulp.
. . . assists in taking a census of wildlife.
. . . surveys property lines and roads.
. . . fights forest fires.

PUPIL PERFORMANCE OBJECTIVES

COPING BEHAVIOR

. . . communicate through role playing an understanding of how various people rely on the forest products and how the forest technician works with them for the benefit of all.

. . . list some ways forest technicians and the recreational visitors must compromise in order that both may benefit from the use of the forest.

ATTITUDES AND APPRECIATIONS

. . . role play some of the tasks of a forest technician which can be affected by the way he accepts that responsibility.

CAREER INFORMATION

. . . compare some aptitudes needed by a forest technician which are different from those needed by one who works at another selected occupation.

EDUCATIONAL AWARENESS

. . . list those subject matter skills used in this module by the student that a forest technician would also use.

INSTRUCTIONAL ACTIVITIES

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. Use discretion as to which activities to use for the whole class and which can be delegated to small groups or individuals to be shared with the class at a later time. Develop additional activities which can add to the child's understanding of this unit.

ACTIVITIES to develop the CAREER DEVELOPMENT CONCEPTS

1. Let the children hang unwrapped samples of forest products or pictures of them on the branches of the Christmas tree. Some products could be put under the tree. Or, have them make a bulletin board display of the many kinds of trees and animals found in the forest. Have the children make a display of pictures and actual objects made of wood. Stress the idea of how important it is that each worker from the forest to the

A contribution to group effort can be made by demonstrating ability to both compromise and exercise influence in achievement of group goals.
Coping Behavior

Knowledge and skills in subject areas are helpful in occupational competence.
Educational Awareness

Work involves the acceptance of responsibility for a task.
Attitudes and Appreciations

consumer does his job well. What are some of the consequences suffered because of the irresponsibility of these workers?

2. Let the children make a map of their neighborhood showing the location of trees which could be harvested?

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

3. Make a cruising stick by cutting a strip of flexible paper or cardboard about ½ inch wide and 45 inches long. Beginning at one end make ink marks 3.14 inches apart. These inches are equal to one inch in tree diameter. Using this cruising stick, measure the size of some of the trees in the school yard by measuring the trunk 4½ feet above the ground.

Work involves the acceptance of responsibility for a task.

Attitudes and Appreciations

4. Have the children identify and record the kinds of trees found growing in their neighborhoods.

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

5. Have the children do some research to find out the kinds of trees logged in their state. Visit a local lumber yard and find out what uses the community makes of its local trees.

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

6. Let a child make a telephone call to a lumber yard to find out such things as: Is lumber shipped to the local community from other areas? If so, why is it? What is it used for? What people depend on the lumber dealer to supply their materials?

Work involves the acceptance of responsibility for a task.

Attitudes and Appreciations

7. Have a sample of a cut tree brought to the classroom. Help the children read its story.

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

8. Let a group of children make a diorama of a forest showing some methods of logging and reforestation. Include a fire tower. Make a Forest Fire Danger Sign. Use an arrow to point to low, medium,

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

high, and extremely high. Check local weather conditions in order to know where to set the arrow.

9. Brainstorm the class to see what personal characteristics they think a forest technician and a worker in another occupation would need. Help the students do some simple research to further identify those characteristics.

Occupations require special personal characteristics.

Career Information

10. Choose a group of children to design a sign which will be used to tell the loggers that a particular tree is to be cut.

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

11. Help the children select a game bird to study. Let some children make a picture of it and a map locating it in the U. S. List some topics such as its size; range; habitat; characteristic markings; nesting habits; seasonal, migratory, or transitory habits; food; and adaptability to getting its food. Let several students choose the topic of their choice to research. Have each student write a short report about his topic and make a book of the reports, picture, and map. Give a copy of the book to each child.

Work involves the acceptance of responsibility for a task.

Attitudes and Appreciations

12. Make a wildlife survey at a farm, a park, etc. Draw a detailed map showing creeks, ponds, wooded areas, dens, trees, fields, and bushes suitable for wildlife. Make a wildlife feeding station somewhere in the area. What wildlife would enjoy a home here?

A contribution to group effort can be made by demonstrating ability to both compromise and exercise influence in achievement of group goals.

Coping Behavior

13. Take a trip to a wooded area. Have a scavenger hunt. Make a list of things to find such as wild animals, trees which have been cut, seedlings, seeds, and homes of wildlife. Look for evidence of ways the forest technician provides for the enjoyment of man. What can forest visitors do to show their appreciation.

A contribution to group effort can be made by demonstrating ability to both compromise and exercise influence in achievement of group goals.

Coping Behavior

EVALUATION ACTIVITIES

1. Play the game "Let's Go Hunting." Children decide what game animal they would like to be and write it on a colored piece of paper which is pinned to their clothes. The hunter fills out a license, shoulders his gun, and goes looking for game. The animals leave their homes in search of food. When the hunter chooses, he calls out, "Run, animals, run!" and they scamper back to their homes. Those caught by the hunter will put a check on a chart beside the name of the animal which they represent, thus keeping a record of the daily catch. Play for several days, totaling the number bagged in a week. Speculate what would happen if one hunter trapped all the rabbits in that area. When do we need limits on the number of animals bagged? Have children complete their play licenses showing how many of each animal they bagged.

A contribution to group effort can be made by demonstrating ability to both compromise and exercise influence in achievement of group goals.
Coping Behavior

2. Have students role play two forest technicians at work, portraying one as being very responsible and the other as being irresponsible.

Work involves the acceptance of responsibility for a task.
Attitudes and Appreciations

3. Ask the children what aptitudes a forest technician would need to help him be more successful. Compare his talents with those of a plant or animal farmer.

Occupations require special personal characteristics.
Career Information

4. Have the children present a day in the life of a forest technician when math, science, language arts, and social studies skills and knowledge have disappeared.

Knowledge and skills in subject areas are helpful in occupational competence.
Educational Awareness

5. Have the children role play the relationship between the forest technician and the forest visitor.

A contribution to group effort can be made by demonstrating ability to both compromise and exercise influence in achievement of group goals.
Coping Behavior

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3. Our Feathered Friends, Wyoming Game and Fish Commission.

4. *Sam Sprucetree*, Consolidated Papers, Inc.
5. *Sonny Squirrel and the Pine Trees*, American Humane Education Society.
6. *Teacher's Guide to Forestry Activities*, Texas Forest Service. (25¢/copy to non-Texas residents).
7. *Ten Lessons in Forestry*, Southern Pine Association.
8. *Wildlife of Forest and Rangeland*, National Wildlife Federation.
9. *World Around You -- Educational Packet*, Garden Club of America.

Audio-Visuals

1. *The Woodcock*, Bureau of Sport Fisheries and Wildlife. Film.
2. *The Woods at Home*, American Humane Education Society. Filmstrip.
3. *The Working Forest*, Union Pacific Railroad, Department of Agricultural Development. Film.

Elementary Teachers Guide to Free Curriculum Materials. Educators Progress Service, Incorporated, Randolph, Wisconsin, 1970.

Printed Materials

1. *Edible Fruits of Forest Trees FS-36*, U. S. Department of Agriculture, Forest Service.
2. *Ranger 'rithmetic for First and Second Grade Teachers FS-1*, U. S. Department of Agriculture, Forest Service.
3. *Ranger 'rithmetic for Fourth Grade Teachers FS-4*, U. S. Department of Agriculture, Forest Service.
4. *Ranger 'rithmetic for Third Grade Teachers FS-3*, U. S. Department of Agriculture, Forest Service.

Organizations

Defenders of Wildlife, 2000 N. Street, N. W., Suite 201, Washington, D. C. 20036.

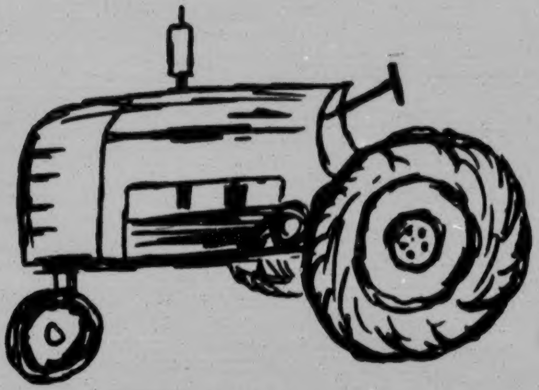
Forest Service, U. S. Department of Agriculture, Washington, D. C. 20250.

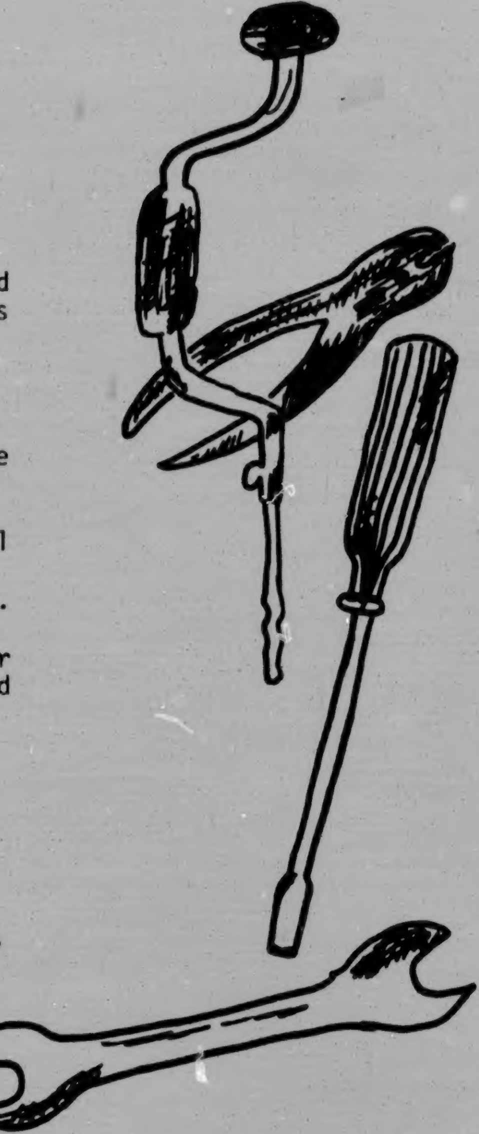
National Audubon Society, 1600 Rhode Island Avenue, Washington, D. C. 20036.

National Wildlife Federation, 1412 - 16th Street, N. W., Washington, D. C. 20036.

State Fish and Game Departments. (These usually have the same address as the state capitol).

Wildlife Management Institute, 709 Wire Building, Washington, D. C. 20016.

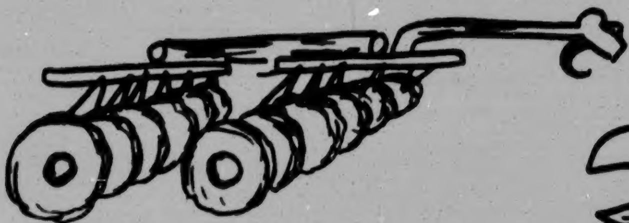




Major Career Development Dimension
SELF-DEVELOPMENT

Occupational Study
FARM EQUIPMENT MECHANIC

The implusive curiosity of a primary-aged child often leads him to ask, "What makes that work?" At this age, some children take their toys apart to find out what mechanical parts are there. Many find that they are successful mechanics while taking a toy apart but that it takes some special abilities and physical characteristics to put it back together. A farm equipment mechanic must have special abilities and physical characteristics, too, in order to do his job successfully. Most primary children will enjoy this study of the Farm Equipment Mechanic, for they will be given an opportunity to find out some things about the Farm Equipment Mechanic, and, at the same time, learn more about "What makes that work?"



BEFORE YOU BEGIN

The occupational area considered in this study is that of AGRICULTURAL MECHANICS. The occupations in this area are involved in the gaining and using of knowledge and skills related to power, machinery, and tools; agricultural structures; soil and water management; and electrification.

This unit deals with power, machines, and tools and their use in agriculture. It considers the gaining and using of knowledge and skills for the purchase, operation, and maintenance of agricultural equipment while developing an awareness of the specific occupation of FARM EQUIPMENT MECHANIC.

The developmental CAREER DEVELOPMENT DIMENSION for this particular study is that of SELF-DEVELOPMENT. The concept *individuals differ in their physical characteristics* is well suited to the occupation of the farm equipment mechanic. Required in this occupation are the physical strength and endurance to work with heavy equipment and tools as well as the manual dexterity to work in small areas.

The other concepts in this study are of an interacting nature. The student should begin to understand that *a given work setting requires certain policies and procedures,* that *occupations require the use of specific materials and equipment,* and that *career-oriented learning may take place in or out of school.*

Subject matter which is fused in the activities is listed so that the teacher might identify some of the educational knowledge and skills necessary to research and/or perform a particular occupational task during this study and/or on the job. The subject matter used is at or below the grade for which the module is written.

The occupational information given is intended to give the teacher a brief overview of some of the tasks and requirements of a person in this particular occupation. At the end of each module, a list of resources is given for additional information.

Pupil performance objectives are written for each of the career development concepts. For the acquisition of those objectives, subject matter and occupational information relevant to the level of the child's development are used. The objectives contain only a statement of terminal behavior.

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. The teacher may wish to use some of the activities for the whole class, and others may be delegated to small groups or individuals. These activities form a nucleus around which interest can be stirred for the child and around which the teacher will want to develop additional activities.

The evaluation activities suggest various ways to evaluate the child's level of conceptualization of the career development concepts as they are stated in the pupil performance objectives. Because the classroom teacher is the best qualified evaluator in her classroom, she should decide HOW a given knowledge or skill shall be demonstrated, and the QUALITY and QUANTITY of knowledge or skill required for a particular child or group of children. The writers of these materials have also made the assumption that the teacher will decide whether she uses all or some of the suggested activities or some activities which she adds to the unit. These factors will affect the pupil evaluations.

CAREER DEVELOPMENT CONCEPTS

SELF-DEVELOPMENT

Major Concept	Individuals differ in their interests, aptitudes, values, and achievements.
Subconcept	*Individuals differ in their physical characteristics.*

ATTITUDES AND APPRECIATIONS

Major Concept	Society is dependent upon the productive work of individuals.
Subconcept	*A given work setting requires certain policies and procedures.*

CAREER INFORMATION

Major Concept	Basic career information will aid in making career-related decisions.
Subconcept	*Occupations require the use of specific materials and equipment.*

EDUCATIONAL AWARENESS

Major Concept	Educational skills and experiences are related to the achievement of career goals.
Subconcept	*Career-oriented learning may take place in or out of school.*

INFUSED SUBJECT MATTER

Mathematics

1. Time schedules
2. Work order sheets
3. Warranties
4. Comparisons of cost

Language Arts
  1. Displays
  2. Vocabulary
  3. Research
  4. Creative writing
  5. Role playing

Science
  1. Machines
  2. Picture taking

Social Studies
  1. History
  2. Field trips
  3. Economics

OCCUPATIONAL INFORMATION

Agricultural Equipment and Mechanics

Agricultural equipment and mechanics is the developing of new and improved agricultural equipment and structures, their operation and maintenance; the solving of soil and water problems; the designing and supervising of irrigation systems; and the designing and using of various power systems.

Sample occupation: A Farm Equipment Mechanic

. . . maintains, repairs, and overhauls farm machinery and other mechanized, electrically powered, or motor-driven equipment.
. . . owns or works on a large or small farm, for a farm implement dealer, for farm equipment manufacturers, or in his own shop with his own tools and customers.
. . . examines machines, motors, gasoline and diesel engines, and equipment for operational defects.
. . . dismantles defective parts using handtools and machine tools.
. . . reassembles, adjusts, and lubricates machines and equipment.
. . . installs and repairs motors to maintain farm electrical system.
. . . installs and repairs farm structures and plumbing.
. . . assembles and erects new farm machinery and equipment.
. . . is a high school graduate and finds that work experience on a farm and/or a year or two of specialized training at a technical school is recommended.
. . . receives on-the-job training.

PUPIL PERFORMANCE OBJECTIVES

SELF-DEVELOPMENT

. . . define the importance of good eyesight, physical strength, and endurance in performing the tasks required of the farm equipment mechanic.

ATTITUDES AND APPRECIATIONS

. . . list some of the procedures a farm mechanic goes through in attempting to isolate particular farm equipment problems.

. . . state the meaning and purpose of warranties and the farm mechanic's obligations in regard to these.

CAREER INFORMATION

. . . identify some of the major materials, equipment, and tools which a farm equipment mechanic would use in his work.

EDUCATIONAL AWARENESS

. . . tell the meaning of the word "machine."

. . . explain the meaning of "safety first."

. . . list the reading, math, and communication skills needed by a mechanic.

INSTRUCTIONAL ACTIVITIES

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. Use discretion as to which activities to use for the whole class and which can be delegated to small groups or individuals to be shared with the class at a later time. Develop additional activities which can add to the child's understanding of this unit.

ACTIVITIES to develop the	CAREER DEVELOPMENT CONCEPTS
1. Ask students who have model cars or trucks at home to bring them to school and discuss how an interest in this might possibly lead to a career in mechanics. Discuss the physical characteristics one might need to have in attempting to build model cars. Talk about the physical characteristics needed to design, build, or repair farm machinery.	*Individuals differ in their physical characteristics.* **Self-Development**
2. Ask the children to use the dictionary to find the meaning of the word "mechanic," and, using this definition, define a farm equipment mechanic. Point out how a farm equipment mechanic repairing a piece of broken equipment is similar to a doctor treating a sick child.	*Career-oriented learning may take place in or out of school.* **Educational Awareness**

3. Show a picture of a blacksmith and bring out the fact that he was the first farm equipment mechanic. Ask the class to research the blacksmith, and write a report on the jobs he once performed. Compare them with the jobs of the present-day mechanic. Why has his job changed?	*Occupations require the use of specific materials and equipment.* **Career Information**
4. Visit a farm. Notice the size of the tires on the farm equipment. Ask the farmer how much various machines cost and how long they last. Compare the cost of his machines with items within the realm of the child's experiences; i.e., family car, home, school bus, etc. Why would the farmer need to keep his equipment in good condition? Take pictures of the farm equipment with a polaroid camera to be used for display at school.	*Career-oriented learning may take place in or out of school.* **Educational Awareness** *Occupations require the use of specific materials and equipment.* **Career Information**
5. Organize a technological museum by asking the students to make various models of farm machinery with moveable parts. Use tinker toys or string, wheels, wood, buttons, etc. Compare the models with farm machinery.	*Occupations require the use of specific materials and equipment.* **Career Information**
6. Make a display of various tools the farm equipment mechanic uses. Bring in bags of assorted nuts, bolts, screws, washers, and nails for students to discover the many varieties used. Also display the model of an engine and farm equipment models which can all be obtained from a farm machinery company fieldman on loan or from a vocational technical school.	*Occupations require the use of specific materials and equipment.* **Career Information**
7. Discuss machines with the class. Brainstorm and list the various machines that would be found on a farm. Include simple machines also.	*Occupations require the use of specific materials and equipment.* **Career Information**
8. Make or ask students to make a bulletin board showing early farm equipment and modern-day replacements. Would a farm equipment	*Occupations require the use of specific materials and equipment.* **Career Information**

mechanic need to keep abreast of new equipment and changes that take place in tools used? Why or why not?	
9. Divide the class into groups and have them draw extra large pictures of farm machines, labeling the important parts of the machines.	*Occupations require the use of specific materials and equipment.* Career Information *Career-oriented learning may take place in or out of school.* Educational Awareness
10. Tour a farm equipment mechanic's shop. Notice the size and type of machines worked on, tools used, safety precautions observed, work performed by the mechanic, and special clothing worn. Observe the routine he goes through and the paperwork involved. Ask him about warranties, how they are handled, and how the heavy equipment gets into the shop. What physical characteristics did the farm mechanic appear to have?	*Career-oriented learning may take place in or out of school.* Educational Awareness *Individuals differ in their physical characteristics.* Self-Development *A given work setting requires certain policies and procedures.* Attitudes and Appreciations *Occupations require the use of specific materials and equipment.* Career Information
11. Discuss with the class reasons why farm equipment might need repairing (deterioration, rust, accidental breakage, and faulty workmanship). Have a repair day at school when students bring in their broken toy trucks, cars, etc. Have students take turns pretending to be mechanics. Have them check the toys thoroughly and tell the class what is wrong with them and how they could be repaired. Work orders should be filled out, and then steps should be taken to fix the toys. Ask the children if they needed good eyesight, muscular coordination, etc. Some toy trucks might be brought which come apart. Some students may try to put them together.	*Individuals differ in their physical characteristics.* Self-Development *A given work setting requires certain policies and procedures.* Attitudes and Appreciations
12. Talk about lubrication and why machinery needs to be oiled (to reduce friction, to reduce wear, to absorb shocks, to help seal the pistons, and to help cool some parts of the engine while distributing heat to others). What things at school	*Occupations require the use of specific materials and equipment.* Career Information

and home are oiled? Have the children take turns oiling some things. What parts of machinery are oiled?

13. Ask the class to do some research on agricultural machines and write a story about one of them, such as "The Tractor That Couldn't Work." Emphasize safety precautions to be followed during repairs.

Career-oriented learning may take place in or out of school.
Educational Awareness

14. Let a student who is particularly interested in engines investigate how an engine operates. Using a large picture or model of an engine, let that student give an illustrated talk on the topic. Help the children make a comparison of bicycle riding and the operation of an engine.

Career-oriented learning may take place in or out of school.
Educational Awareness

15. Let the children do some experimenting to see how simple machines help us do work. Let them try lifting, pushing, and pulling loads. Have them move the same load using simple machines (pulley, lever, screw, wheel and axle, wedge, and inclined plane).

Occupations require the use of specific materials and equipment.
Career Information

16. Have students pretend that they are farm equipment mechanics and have them fill out a daily work schedule. Include the time they arrived, equipment they worked on, lunch hour time, special problems they encountered, and departure time. Compare the mechanic's average work day with a typical school day. Are there certain routine procedures common to both?

A given work setting requires certain policies and procedures.
Attitudes and Appreciations

17. Have students make a handbook for a farm equipment mechanic showing the various farm machines he might service. Identify the use of the machines on the farm. The following are suggestions: moldboard plow, chisel plow, disk, row crop cultivator, rotary hoe, field cultivator, fertilizer spreader, sprayer, grain drill, corn planter, combine, corn picker, mower or hay

Career-oriented learning may take place in or out of school.
Educational Awareness

conditioner, rake, baler, forage harvester, and trucks. If possible, call a farm equipment dealer and find out the expense of each of these.

18. Take the students for a ride in a farm truck to get an idea of its size. Stop at a service station and allow children to observe the checking of the tires with the air pressure gauge, the fueling process, and other checks. Find out how tires are changed on these trucks. What physical characteristics would a farm equipment mechanic need to be able to drive farm trucks and to keep them in good running order?

Individuals differ in their physical characteristics.
Self-Development
Career-oriented learning may take place in or out of school.
Educational Awareness

19. Have the students pretend that they are reporters for a farm magazine and receive a call that all types of wheels have disappeared from a particular farm. Write a feature article on the effect this had on the operation of the farm.

Occupations require the use of specific materials and equipment.
Career Information

EVALUATION ACTIVITIES

1. Invite other classes to visit the classroom, and have the students tell about the job of the farm equipment mechanic, his physical characteristics, the jobs he performs, his work setting, equipment and tools he uses, the procedures he follows, and the importance of his job to the farmer. Allow them to view the art work and displays, and explain the changes in farm equipment over the years.

Individuals differ in their physical characteristics.
Self-Development
A given work setting requires certain policies and procedures.
Attitudes and Appreciations
Occupations require the use of specific materials and equipment.
Career Information

2. Have the students make a list of broken items they have at home which are in need of repair. Have them make plans for setting up a repair shop at home in which to do some repair work. At a later date, have each student make a chart showing what he repaired, what tools were used, and what enjoyment he had.

Career-oriented learning may take place in or out of school.
Educational Awareness

RESOURCES

Books

Becker, Beril. Mechanical Man. G. P. Putnam's Sons.

Epstein, Sam and Beryl. All About Engines and Power. Random House, 1962.

Hunt, D. R. Selection of Farm Machinery. University of Illinois at Urbana-Champaign, College of Agriculture, Co-operative Extension Service Circular 876-1963.

Meyer, Jerome S. Engines. World Publishing Co., 1962.

Otto, Margaret and Stuart. The Tractor Book. William Morrow and Company, New York, N. Y., 1953.

Careers in Agriculture. American Institute of Cooperation, 1200 17th Street, N. W., Washington, D. C. 20036, 1969.

Machinery Care and Safety. 4-H Tractor Program, National 4-H Service Committee, Chicago, Illinois, 1963.

Tires for Farm Equipment. Vocational Agriculture Service, University of Illinois, Champaign-Urbana, Illinois.

Audio-Visuals

Getting Old Red Ready. Farm Film Foundation, 1960. Film.

How Machines and Tools Help Us. David C. Cook, Texas Educational Aids. Film.

Mechanized Farming. Classroom Film Distributors, Inc., 1962. Film.

Free Materials

Educators Guide to Free Social Studies Materials. Educators Progress Service, Incorporated, Randolph, Wisconsin, 1970.

Printed Materials

1. The Story of John Deere, Deere and Company

Elementary Teachers Guide to Free Curriculum Materials. Educators Progress Service, Incorporated, Randolph, Wisconsin, 1970.

Printed Materials

1. Farm Mechanics Shop #429.04-6, National Safety Council
2. Hand Tools #429.04-15, National Safety Council
3. Safety in the Machine Shop #429.04-53, National Safety Council

Organizations

Deere and Company, John Deere Road, Moline, Illinois 61265.

International Harvester Company, 401 North Michigan Avenue, Chicago, Illinois 60611.

Major Career Development Dimension
COPING BEHAVIOR

Occupational Study
CHRISTMAS TREE FARMER

Children at the intermediate level are very much interested in trees and Christmas trees in particular. In the study of the American culture, they learn that the Christmas tree has a very impor-tnat part in the winter holiday season celebration. Because of the changes that have been made from the individual cutting his own tree to buying one grown commercially, it was felt that this was an ideal occupation to show how performance requirements for a job may change with time. In capitalizing on the child's interest in Christmas trees, it is possible to help him become aware of the importance of the farmer who provides this product.

BEFORE YOU BEGIN

The occupational area considered in this study is that of FORESTRY. The occupations in this area are concerned with managing and utilizing timber resources; providing facilities for recreation; looking after grazing lands; developing homes for wildlife; safeguarding water supplies; reproducing, protecting, and improving forests; and researching methods of keeping the land productive.

This unit deals with one aspect of the area of FORESTRY, the management and utilization of timber resources, while developing an awareness of the occupation of the CHRISTMAS TREE FARMER.

The developmental CAREER DEVELOPMENT DIMENSION for this particular study is that of COPING BEHAVIOR. The concept *performance requirements for a job may change with time* is ideal to use with the study of the Christmas tree farmer because the consumer demands more and better formed trees. Many changes have been made in the level of performance requirements to provide a salable product.

The other concepts in this study are of an interacting nature. The student should begin to understand that *completion of a worthwhile task has value for the worker and for society,* that *occupations require the use of specific materials and equipment,* and that *learning achievement depends upon effort and ability.*

Subject matter which is fused in the activities is listed so that the teacher might identify some of the educational knowledge and skills necessary to research and/or perform a particular occupational task during this study and/or on the job. The subject matter used is at or below the grade for which the module is written.

The occupational information given is intended to give the teacher a brief overview of some of the tasks and requirements of a person in this particular occupation. At the end of each module, a list of resources is given for additional information.

Pupil performance objectives are written for each of the career development concepts. For the acquisition of those objectives, subject matter and occupational information relevant to the level of the child's development are used. The objectives contain only a statement of terminal behavior.

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. The teacher may wish to use some of the activities for the whole class, and others may be delegated to small groups or individuals. These activities form a nucleus around which interest can be stirred for the child and around which the teacher will want to develop additional activities.

The evaluation activities suggest various ways to evaluate the child's level of conceptualization of the career development concepts as they are stated in the pupil performance objectives. Because the classroom teacher is the best qualified evaluator in her classroom, she should decide HOW a given knowledge or skill shall be demonstrated, and the QUALITY and QUANTITY of knowledge or skill required for a particular child or group of children. The writers of these materials have also made the assumption that the teacher will decide whether she uses all or some of the suggested activities or some activities which she adds to the unit. These factors will affect the pupil evaluations.

CAREER DEVELOPMENT CONCEPTS

COPING BEHAVIOR

Major Concept	Individuals can learn to perform adequately in a variety of occupations and occupational environments.
Subconcept	*Performance requirements for a job may change with time.*

ATTITUDES AND APPRECIATIONS

Major Concept	Society is dependent upon the productive work of individuals.
Subconcept	*Completion of a worthwhile task has value for the worker and for society.*

CAREER INFORMATION

Major Concept	Basic career information will aid in making career-related decisions.
Subconcept	*Occupations require the use of specific materials and equipment.*

EDUCATIONAL AWARENESS

Major Concept	Educational skills and experiences are related to the achievement of career goals.
Subconcept	*Learning achievement depends upon effort and ability.*

INFUSED SUBJECT MATTER

Mathematics
1. Computation
2. Money
3. Averages

Language Arts
    1. Interviews
    2. Creative writing
    3. Discussions
    4. Sequence of events
    5. Play writing and acting
    6. Word origins
    7. Card catalogue

Science
    1. Identification
    2. Planting and methods of replanting

Social Studies
    1. History
    2. Economics
    3. Community awareness
    4. Resources

OCCUPATIONAL INFORMATION

Forestry

Forestry is the young and expanding profession of scientific management of forests, forest land, and their products in order to insure continuous production of goods and services. The occupations in this study are concerned with managing and utilizing timber resources; providing facilities for recreation; looking after grazing lands; developing homes for wildlife; safeguarding water supplies; reproducing, protecting, and improving forests; and researching methods of keeping the land productive.

Sample Occupation: A Christmas Tree Farmer

. . . prepares soil for planting.
. . . plants seeds and transplants seedlings.
. . . checks seedlings for disease and insects.
. . . applies fertilizer, pesticides, fungicides, and herbicides when necessary.
. . . sees that trees get enough sunlight and irrigates during dry weather.
. . . prunes trees and mows between rows.
. . . determines trees to be harvested.
. . . locates Christmas tree buyers and takes bids and orders for for trees.
. . . cuts trees to be harvested.
. . . bundles and loads cut trees onto trucks to ship to market.
. . . keeps records of production costs and sales and determines the number of trees to be planted for future supply.
. . . works outdoors and wears special clothing when necessary.
. . . hires part-time or seasonal workers.
. . . needs no high school degree, although it is helpful.

PUPIL PERFORMANCE OBJECTIVES

COPING BEHAVIOR

. . . discuss the history and origin of the Christmas tree and compare early and modern methods of planting, shearing, cutting, and displaying.

ATTITUDES AND APPRECIATIONS

. . . aid other students in planting a tree in order to develop a bird feeding station to be enjoyed by the birds, students, and community.

CAREER INFORMATION

. . . identify, either orally or in writing, various tasks such as grading, planting, record keeping, control of diseases and enemies; the time of year for the performance of each activity; various conifers grown as Christmas trees; and materials and equipment used by the Christmas tree farmer.

EDUCATIONAL AWARENESS

. . . contrast a Christmas tree farm that is not carefully planned with one that is. Use the play suggested in the activities for a frame of reference.

INSTRUCTIONAL ACTIVITIES

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. Use discretion as to which activities to use for the whole class and which can be delegated to small groups or individuals to be shared with the class at a later time. Develop additional activities which can add to the child's understanding of this unit.

ACTIVITIES to develop the CAREER DEVELOPMENT CONCEPTS

1. Show the filmstrip "A Williamsburg Christmas" or read a poem or story about decorating a Christmas tree. Have students write up their own descriptions of a beautifully decorated tree, and pick one to illustrate using any media they wish. Discuss the joy and satisfaction people everywhere get when they view a decorated tree. Make a bulletin board with descriptions and illustrations.

Completing a worthwhile task has value for the worker and for society.

Attitudes and Appreciations

2. Divide the class into groups to do research on the origin of the Christmas tree, and find out about early methods of planting, shearing, cutting, and displaying, and compare and/or contrast them with modern methods.	*Performance requirements for a job may change with time.* **Coping Behavior**
3. Arrange to take the class to visit a Christmas tree farm and interview the farmer. Find out about the jobs he performs and the time of year he performs them. Ask about the enemies of trees and the ways he controls them. Ask about the equipment he uses now and what he used in the past, and have him demonstrate planting a seedling with a tree planter.	*Performance requirements for a job may change with time.* **Coping Behavior** *Occupations require the use of specific materials and equipment.* **Career Information**
4. Let the class pick a tree for the farmer to cut down or dig up for the classroom. Watch the process and note the equipment he uses, the special clothing he wears, and the length of time it takes. Find out how old the tree is.	*Occupations require the use of specific materials and equipment.* **Career Information**
5. Let classmates make a mural of "This Is Your Life, Mr. Christmas Tree," showing the planting, harvesting, cutting, selling, and displaying of the tree.	*Learning achievement depends upon effort and ability.* **Educational Awareness**
6. Find out with the class how trees are graded according to U. S. standards. If possible, make arrangements with a Christmas tree lot for the class to observe various trees and see if they can grade some of them. Find out how to keep trees fresh.	*Occupations require the use of specific materials and equipment.* **Career Information**
7. Have students find and compile a list of books about evergreens with the aid of the library's card catalogue and mimeograph them off for the class.	*Occupations require the use of specific materials and equipment.* **Career Information**
8. Have the class make a deck of cards for conifer identification. Have some cards show shapes only, others seed cones only, and others	*Learning achievement depends upon effort and ability.* **Educational Awareness**

needles only. Label each card with the tree name. Play a card game as Authors is played, trying to get all three parts of a specific tree.

9. Have the class write a play about Farmer Pine and Farmer Spruce developing the idea that learning achievements depend on effort and ability. Contrast the energetic, hard-working farmer with the lazy, unorganized one.

Learning achievement depends upon effort and ability.
Educational Awareness

10. Have the class try to get customers to buy their make-believe trees. They can pick any method of advertising. They may wish to make posters, handbills, compose an ad for a newspaper, or write a T.V. or radio commercial. Be sure they include pertinent information.

Learning achievement depends upon effort and ability.
Educational Awareness

11. Have students set up a play Christmas tree stand and role play the farmer trying to sell the tree to the customer. Use toy cash register, toy money, and receipts.

Learning achievement depends upon effort and ability.
Educational Awareness

12. Compile some mathematical problems which the Christmas tree farmer might encounter and have the class work them. Include work with computation, averages, money, area, etc.

Occupations require the use of specific materials and equipment.
Career Information

13. Read and discuss the story "Mr. Posey's Christmas Trees" from the December, 1965, issue of The Instructor, which develops the idea of the result to the farmer when he gets his stand up too late, the problem of artificial trees versus real trees, and the problem of what to do with leftover trees.

Performance requirements for a job may change with time.
Coping Behavior

14. Discuss with the class ways to dispose of trees and plan on replanting the class tree or another tree and making it into a feeding station for the birds. Help children to see that by doing this they will have saved many a starving bird who

Completion of a worthwhile task has value for the worker and for society.
Attitudes and Appreciations

will fill our summers with song and will help eliminate many of our insect pests.

EVALUATION ACTIVITIES

1. Have the students write down the activities they enjoyed most in this unit. List things the farmer does which they would like to do. Could they learn to do these things? Why or why not?

Learning achievement depends upon effort and ability.
Educational Awareness

2. Discuss why the Christmas tree farmer must trim or shear his trees at certain times of the year. What happens if he puts off this job for three or four months?

Completion of a worthwhile task has value for the worker and for society.
Attitudes and Appreciations

3. Have the students make predictions about the future of the Christmas tree farmer i.e., the affect of artificial trees on their market, consumer demands, ecology, possible equipment inventions, or changes in materials for growing or preserving Christmas trees.

Performance requirements for a job may change with time.
Coping Behavior
Occupations require the use of specific materials and equipment.
Career Information

RESOURCES

Magazine Articles

Culver, L. B. "How to Buy, Store, and Display a Christmas Tree to Keep Fresh," Illinois Research. Fall, 1971.

Seymour, Marjorie. "Nature Study," The Instructor. F. A. Owen Publishing Company, Dansville, N. Y., 1961.

Tersoff, Karen. "Mr. Posey's Christmas Trees," The Instructor. F. A. Owen Publishing Company, Dansville, N. Y., December, 1965.

Audio-Visuals

Let's Visit a Tree Farm. Coronet Films, 1967. Film.

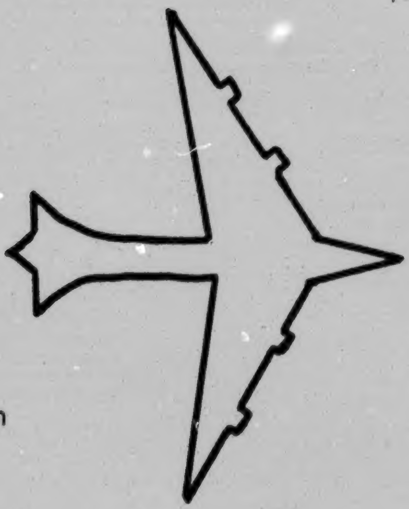
A Williamsburg Christmas. Williamsburg, Virginia. Filmstrip.

Organizations

Christmas Tree Growers' Association. American Christmas Tree Journal. 225 East Michigan Street, Milwaukee, Wisconsin 53202.

Forest Research Laboratories, Dept. ACG, Norwalk, Connecticut 06856.

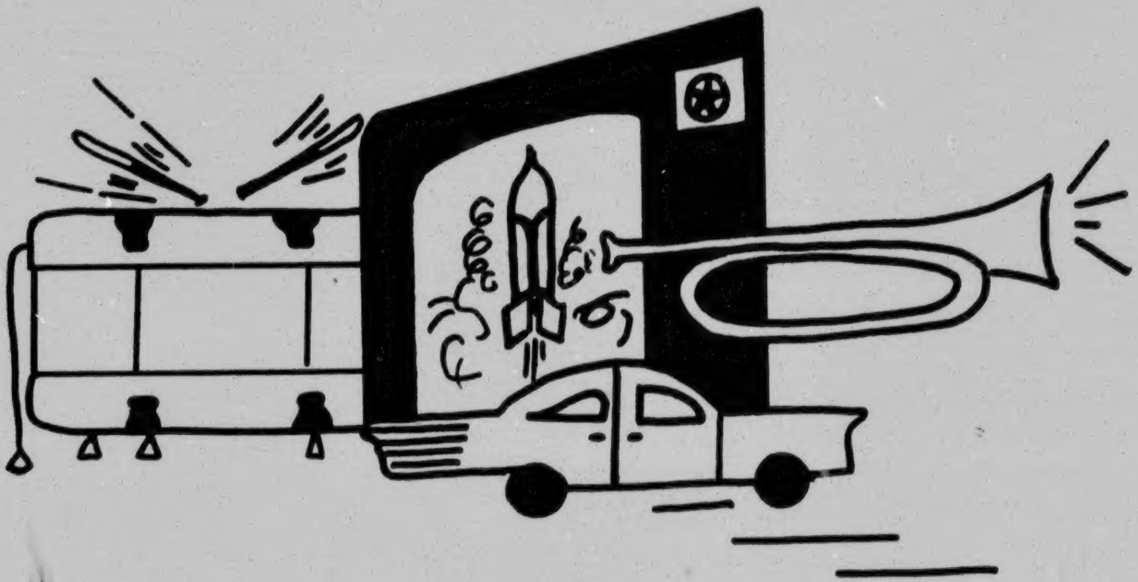
U. S. Department of Agricultural Stabilization and Conservation Service, Toledo, Illinois 62468.



Major Career Development Dimension
SELF-DEVELOPMENT

Occupational Study
ENVIRONMENTAL TECHNICIAN (NOISE)

Listen! Hear loud music? Is a group of children gathered around? This combination is affecting our environment. Intermediate-aged children are extremely concerned about group membership. At the same time, they are beginning to chose a musical instrument to study and have a strong interest in record playing. Their group activities are usually accompanied with loud noises of varied nature. While studying about an occupation that is involved in noise control, these children may learn that their membership and activity in a group can affect themselves, the group, and others of our society.



BEFORE YOU BEGIN

The occupational area considered in this study is that of ENVIRONMENTAL PROTECTION. The occupations in this area are involved in the protection of our environment by helping to prevent and control problems related to water, air, radiation, noise, waste water, solid waste, and natural resource pollution.

This unit deals with noise, which is one aspect of the area of ENVIRONMENTAL PROTECTION. It considers noise pollution, its dangers, prevention, and control while developing an awareness of the specific occupation of ENVIRONMENTAL TECHNICIAN (NOISE).

The developmental CAREER DEVELOPMENT DIMENSION for this particular study is SELF-DEVELOPMENT. The subconcept *a person's membership in a group affects the group as well as himself* seems well-suited to the study of an environmental technician (noise). This occupation is made necessary because of noise made by groups of people. A natural result is that members of the group as well as other people nearby are affected by the actions of others. Excessive noise, which is the concern of the environmental technician (noise), can be abated by concerned individual members of groups.

The other concepts in this study are of an interacting nature. The student begins to see that *technological, economic, social, and political factors influence supply and demand of jobs;* that *most occupations include common expectations, such as punctuality, dependability, and avoidance of excessive absence;* and that *career-oriented learning may take place in or out of school.*

Subject matter which is fused in the activities is listed so that the teacher might identify some of the educational knowledge and skills necessary to research and/or perform a particular occupational task during this study and/or on the job. The subject matter used is at or below the grade for which the module is written.

The occupational information given is intended to give the teacher a brief overview of some of the tasks and requirements of a person in this particular occupation. At the end of each module, a list of resources is given for additional information.

Pupil performance objectives are written for each of the career development concepts. For the acquisition of those objectives, subject matter and occupational information relevant to the level of the child's development are used. The objectives contain only a statement of terminal behavior.

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. The teacher may wish to use some of the activities for the whole class, and others may be delegated to small groups or individuals. These activities form a nucleus around

which interest can be stirred for the child and around which the teacher will want to develop additional activities.

The evaluation activities suggest various ways to evaluate the child's level of conceptualization of the career development concepts as they are stated in the pupil performance objectives. Because the classroom teacher is the best qualified evaluator in her classroom, she should decide HOW a given knowledge or skill shall be demonstrated, and the QUALITY and QUANTITY of knowledge or skill required for a particular child or group of children. The writers of these materials have also made the assumption that the teacher will decide whether she uses all or some of the suggested activities or some activities which she adds to the unit. These factors will affect the pupil evaluations.

CAREER DEVELOPMENT CONCEPTS

SELF DEVELOPMENT

Major Concept	An understanding and acceptance of self is important.
Subconcept	*A person's membership in a group affects the group as well as himself.*

ATTITUDES AND APPRECIATIONS

Major Concept	Society is dependent upon the productive work of individuals.
Subconcept	*Most occupations include common expectations, such as punctuality, dependability and avoidance of excessive absence.*

CAREER INFORMATION

Major Concept	Basic career information will aid in making career-related decisions.
Subconcept	*Technological, economic, social, and political factors influence supply and demand of jobs.*

EDUCATIONAL AWARENESS

Major Concept	Educational skills and experiences are related to the achievement of career goals.
Subconcept	*Career-oriented learning may take place in or out of school.*

INFUSED SUBJECT MATTER

Mathematics
1. Perimeter and area of square, rectangle, triangle, parallelogram
2. Use of scale on map

Language Arts
1. Writing definitions, advertisements, slogans
2. Controlling pitch, volume, tone
3. Talking about parents' jobs
4. Interviewing
5. Letter writing

Science
1. Habitat -- chosen and changed by man
2. Waves, pitch, frequency, acoustics in sound
3. Comparisons by careful measurements
4. Classification according to likenesses

Social Studies
1. Rules for interaction
2. Influences of physical environment on ways of life
3. Tabular information
4. Influences of groups on ways of life
5. Taking surveys

OCCUPATIONAL INFORMATION

Environmental Protection

Occupations in this area are involved in the protection of water, air, and soil, all of which are essential to man's survival, and the elimination or control of man-made elements which are harmful to man and to the environment.

Sample Occupation: An Environmental Technician (noise)

. . . helps preserve and increase the purity of our environment.
. . . is concerned with prevention and control of noise.
. . . makes surveys to help determine the effect of noise on public health and welfare.
. . . inspects and evaluates sources of noise to determine compliance with laws and regulations concerning noise levels.
. . . knows the regulations and statutes that establish standards for safe levels of environmental noise.
. . . identifies causes and sources of noise.
. . . measures noise level.
. . . collects data on amounts, types, levels, effects, etc., of noise.
. . . does surveillance and makes reports on findings to appropriate enforcement agencies.
. . . identifies and recommends operational procedures or methods in developing solutions for noise problems.

. . . advises in the planning process for new cities, transportation, etc.

. . . will find it necessary to become certified when the procedure is established.

PUPIL PERFORMANCE OBJECTIVES

SELF-DEVELOPMENT

. . . cite some activities in which groups participate that make an environmental noise technician's job necessary.

ATTITUDES AND APPRECIATIONS

. . . list the duties of the environmental technician (noise) which require him to be extremely dependable.

CAREER INFORMATION

. . . name some of the problems caused by our technological society which create a demand for environmental technicians (noise).

. . . tell the role of our government in meeting the demand for environmental protection workers.

EDUCATIONAL AWARENESS

. . . state some learnings needed by an environmental technician (noise), identifying those usually learned in school and those which can readily be learned out of school.

INSTRUCTIONAL ACTIVITIES

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. Use discretion as to which activities to use for the whole class and which can be delegated to small groups or individuals to be shared with the class at a later time. Develop additional activities which can add to the child's understanding of this unit.

ACTIVITIES to develop the CAREER DEVELOPMENT CONCEPTS

1. Prepare with the class a list of sounds which seem to exceed the desirable noise level. Chart these noises under headings such as transportation noises, construction noises, farm noises, factory noises, etc. Check those noises which could not have been heard fifty years ago	*Technological, economic, social, and political factors influence supply and demand of jobs.* **Career Information**

and twenty-five years ago. Point out the influence of technology. Are there other reasons for more noise problems today?

2. Have the children in groups or as individuals make a survey of their neighborhood to find out what sounds annoy household members. Organize the gathered data and construct a table showing what sounds are annoying and the number of times each annoying sound was mentioned.

Career-oriented learning may take place in or out of school.
Educational Awareness

3. Have some students perform a noise study in the school. Help them choose locations for their study and provide them with watches (time-telling devices) if possible. Have them keep a record of all disturbing sounds, pitch and loudness of the sounds, and the approximate duration. Repeat this procedure each day at the same exact time for at least five days. Let the class analyze the data and make comparisons of the types, amounts, and duration of noises at each location. This data could be used to see if the school building was well planned (i.e., the library located away from a busy street or the gymnasium). Discuss what would happen if one of the recorders were late to his station, failed to show up at all, or was not a dependable record keeper.

Most occupations include common expectations, such as punctuality, dependability and avoidance of excessive absence.
Attitudes and Appreciations

4. Have the students question each member of their family asking each what noise disturbs them most. Compile results on the chalkboard, and discuss what the students as members of their family groups can do to relieve the annoyance of the other family members.

A person's membership in a group affects the group as well as himself.
Self-Development

5. Have students collect newspaper and magazine articles about noise pollution. Have each student select one major problem and through research, interviews, sharing of ideas, and use of personal experience find some possible solutions to the problem. When solutions have been

Career-oriented learning may take place in or out of school.
Educational Awareness

arrived at, share ideas with the class in order to help evaluate the merits of each solution. Will the solution work? Why or why not?

6. Take a walk with a portable tape recorder visiting a construction site, road work, or similar work setting. Upon returning to the classroom, replay the tape, identifying the sounds, and rank them as to noise level marking those which students feel exceed the safe noise level.

Career-oriented learning may take place in or out of school.
Educational Awareness

7. Have someone from city government visit the classroom. Find out if local government enforces noise abatement ordinances in the city. Discuss what measures a group of concerned citizens can take to inform the city of excessive noise. Make a study of petitions and let the students go through procedures necessary to circulate a mock petition in their classroom. Write a sample letter to the editor or a city official about some noise problem being sure that the facts are gathered carefully and the case well presented.

A person's membership in a group affects the group as well as himself.
Self-Development

8. Have the class research the role of city planners and construction companies in noise control and discuss how proper land use, zoning, and building regulations can help create a less noisy atmosphere. Make a mural, map, or model town showing where to locate airports, industry, residential areas, etc., for maximum noise control. Landscaping as a part of noise control could also be included.

Technological, economic, social, and political factors influence supply and demand of jobs.
Career Information

9. Have information gathered which tells about the Environmental Protection Agency (E.P.A.) and/or interview some E.P.A. personnel. Find out why it was formed and the work it is now carrying on in relation to noise pollution. Discuss how technology, economy, and society

Technological, economic, social, and political factors influence supply and demand of jobs.
Career Information

have made the jobs of E.P.A. personnel a must in our present day world.

10. Have students find lists of sounds and the decibels of each sound. Compile the lists on a chart. Familiarize the students with the term decibels. Point out that there are ways of measuring noise exposure and that it is a job for experts using complex measuring instruments. Discuss some of the qualifications and personal qualities needed by the technician who makes such measurements.

Most occupations include common expectations, such as punctuality, dependability and avoidance of excessive absence.

Attitudes and Appreciations

11. Visit the school lunch room, gymnasium, music room, and library. Make comparisons and draw conclusions as to what, where, and when sounds are appropriate, pleasant, annoying, etc. Have students evaluate group behavior in relation to noise at school and to its affect on others. Make plans for modification of noise disturbances by groups.

A person's membership in a group affects the group as well as himself.

Self-Development

12. Have the class make and display posters about noise and noise control to be displayed throughout the school. Since noise control depends upon awareness of the noise problem, a display of posters throughout the city might be considered. Point out that group action on a problem can make a difference.

A person's membership in a group affects the group as well as himself.

Self-Development

13. Have students bring from home noisy toys, appliances, musical instruments, etc. Give ample time to listen to each and let the students try rating them in the order of noise level if they wish. Discuss the number of households having these items and how the health of the family may be affected by the noise they make. Talk about how the change in economy has made it possible for families to have a greater number of modern appliances and toys. Discuss some jobs which have been created because of this change.

Technological, economic, social, and political factors influence supply and demand of jobs.

Career Information

14. Listen to records of bands and orchestras (or attend a concert) and talk about musical sound in terms of noise. Let every child that plays a musical instrument bring it to school on a particular day. Let them experiment with musical sound as groups and individually. Let other students note pitch, volume, and pleasant and unpleasant sounds. Is this type of music pleasing to everyone? Does sound from a particular instrument bother some students and not others? When does music become noise? How is an individual affected by the sound from many instruments played simultaneously compared to the sound from a single instrument?

A person's membership in a group affects the group as well as himself.

Self-Development

EVALUATION ACTIVITIES

1. Have the students list all the things which they can do to help control noise. Include what they can do at home, school, the park, etc. Have them mark those things which can be done as a member of a group and those which are individual efforts.

A person's membership in a group affects the group as well as himself.

Self-Development

2. Have students tell why we have more noise pollution and jobs related to its control than in years past.

Technological, economic, social, and political factors influence supply and demand of jobs.

Career Information

3. Have students make a checklist of desirable qualities needed by most workers. Mark those which are especially needed by an environmental technician (noise). Have them add any which are unique to the environmental technician.

Most occupations include common expectations, such as punctuality, dependability and avoidance of excessive absence.

Attitudes and Appreciations

4. Have students describe some of the necessary learnings for the occupation of the environmental technician (noise) and tell how such learnings can be obtained.

Career-oriented learning may take place in or out of school.

Educational Awareness

RESOURCES

Books

Fanning, Odom. Opportunities in Environmental Careers. Universal, 1971.

Halacy, D. S. Now or Never; The Fight Against Pollution. Four Winds, 1971.

Thompson, Ross. A Noisy Book. Silver Burdett/Time-Life, 1972. (4-6) illus.

Free Materials

Educators Guide to Free Science Materials. Educators Progress Service, Incorporated, Randolph, Wisconsin, 1970.

Printed Materials

1. The Science of Sound and Music, Hammond Organ Company. Transcription.

Audio-Visuals

1. Sonic Boom and You (FA-811), Federal Aviation Administration. Film.

Elementary Teachers Guide to Free Curriculum Materials. Educators Progress Service, Incorporated, Randolph, Wisconsin, 1970.

Printed Materials

1. Ear Structure and Relationships, National Association of Hearing and Speech Agencies.
2. Noise Control with Insulation Board, Acoustical and Insulating Materials Association
3. Sectional Diagram of the Human Ear, Sonotone Corporation.

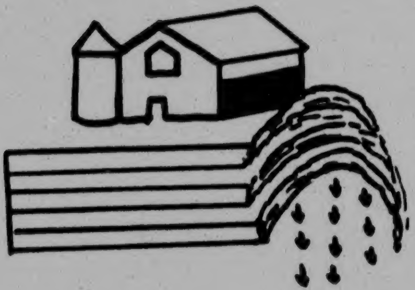
Organizations

Committee for Environmental Information, 428 North Skinker Boulevard, St. Louis, Missouri 63130.

Maico Hearing Instruments, 7375 Bush Lake Road, Minneapolis, Minnesota 55435.

National Air Pollution Control, Publications Unit, 5600 Fishers Lane, Rockville, Maryland 20852.

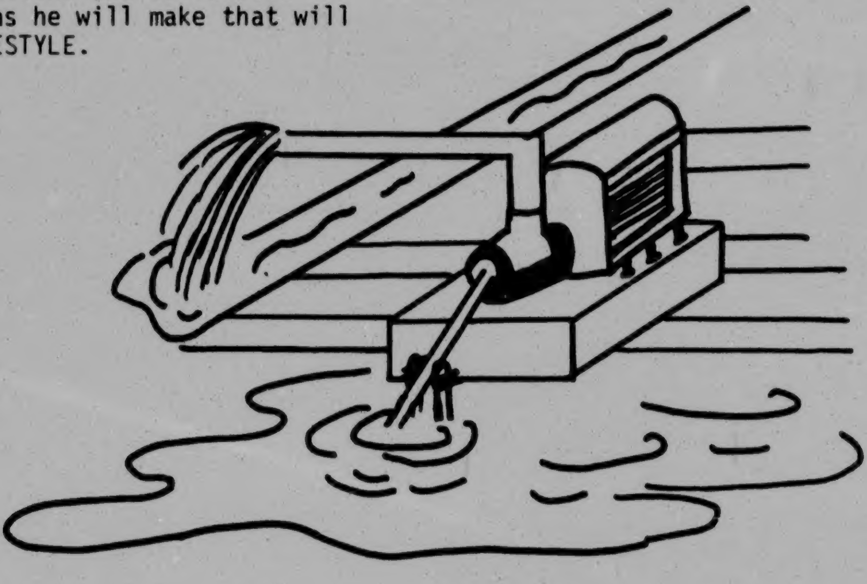
U. S. Environmental Protection Agency, Washington, D. C. 20460.



Major Career Development Dimension
LIFESTYLE

Occupational Study
IRRIGATION ENGINEER

How often has a child announced to the class, "We are going to move"? Children at the intermediate level begin to be involved in such family decisions or at least question why. This unit deals with the LIFESTYLE afforded by an occupation. Perhaps by helping the child understand the relationship between the lifestyle and monetary rewards of the engineer, he will be able to have a clearer understanding of why his parents change job locations and to foresee career decisions he will make that will affect his LIFESTYLE.



BEFORE YOU BEGIN

The occupational area considered in this study is that of AGRICULTURAL MECHANICS. The occupations in the area are involved in the gaining and using of the knowledge and skills related to power, machinery, and tools; agricultural structures; soil and water management; and electrification.

This unit will deal with water management, which is one aspect of the area of AGRICULTURAL MECHANICS. It will consider the designing, constructing, and using of irrigation systems to increase agricultural production while developing an awareness of the specific occupation of the IRRIGATION ENGINEER.

The developmental CAREER DEVELOPMENT DIMENSION for this particular study is that of LIFESTYLE. The concept *relationships exist between desired lifestyles and career monetary rewards* can be illustrated through the study of an irrigation engineer. If the engineer enjoys being out-of-doors or likes to travel, he may choose field work. If he wants indoor work and a permanent location, he may work in an office analyzing field data. If he chooses to supervise the job in the field, he may receive bonuses if the job is completed early or at a lower cost.

The other concepts in this study are of an interacting nature. The student should begin to understand that *a given work setting requires certain policies and procedures;* that *technological, economic, social, and political factors influence supply and demand of jobs;* and that *knowledge and skills in subject areas are helpful in occupational competence.*

Subject matter which is fused in the activities is listed so that the teacher might identify some of the educational knowledge and skills necessary to research and/or perform a particular occupational task during this study and/or on the job. The subject matter used is at or below the grade for which the module is written.

The occupational information given is intended to give the teacher a brief overview of some of the tasks and requirements of a person in this particular occupation. At the end of each module, a list of resources is given for additional information.

Pupil performance objectives are written for each of the career development concepts. For the acquisition of those objectives, subject matter and occupational information relevant to the level of the child's development are used. The objectives contain only a statement of terminal behavior.

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. The teacher may wish to use some of the activities for the whole class, and others may be delegated to small groups or individuals. These activities form a nucleus around

which interest can be stirred for the child and around which the teacher will want to develop additional activities.

The evaluation activities suggest various ways to evaluate the child's level of conceptualization of the career development concepts as they are stated in the pupil performance objectives. Because the classroom teacher is the best qualified evaluator in her classroom, she should decide HOW a given knowledge or skill shall be demonstrated, and the QUALITY and QUANTITY of knowledge or skill required for a particular child or group of children. The writers of these materials have also made the assumption that the teacher will decide whether she uses all or some of the suggested activities or some activities which she adds to the unit. These factors will affect the pupil evaluations.

CAREER DEVELOPMENT CONCEPTS

LIFESTYLE

Major Concept	Work affects an individual's way of life in that a person is a social being, an economic being, a family being, a leisure being, and a moral being.
Subconcept	*Relationships exist between desired lifestyles and career monetary rewards.*

ATTITUDES AND APPRECIATIONS

Major Concept	Society is dependent upon the productive work of individuals.
Subconcept	*A given work setting requires certain policies and procedures.*

CAREER INFORMATION

Major Concept	Basic career information will aid in making career-related decisions.
Subconcept	*Technological, economic, social, and political factors influence supply and demand of jobs.*

EDUCATIONAL AWARENESS

Major Concept	Educational skills and experiences are related to the achievement of career goals.
Subconcept	*Knowledge and skills in subject areas are helpful in occupational competence.*

INFUSED SUBJECT MATTER

Mathematics
1. Measurement
2. Weights - ounces, grams
3. Fractions
4. Comparisons

Language Arts
1. Writing questionnaires
2. Reports
3. Research
4. Creative writing
5. Interviews
6. Letter writing

Science
1. Plant growth
2. Field trips
3. Water cycle
4. Experiments
5. Weather

Social Studies
1. Economics
2. Geography
3. Map construction
4. History of irrigation

OCCUPATIONAL INFORMATION

Agricultural Equipment and Mechanics

Agricultural equipment and mechanics is the developing of new and improved agricultural equipment and structures, their operation and maintenance; the solving of soil and water problems; the designing and supervising of irrigation systems; and the designing and using of various power systems.

Sample Occupation: An Irrigation Engineer

. . . researches various types of irrigation systems.
. . . builds laboratory models frequently to study construction, flow, and problems.
. . . plans and designs irrigation systems, dams, canals, and ditches according to the type of soil.
. . . supervises the construction of irrigation systems.
. . . considers climatic characteristics which affect soil.
. . . computes and estimates water supply and return flow.
. . . specifies the correct type and size of equipment needed.
. . . makes studies on existing systems and recommends changes.
. . . needs a college degree in agricultural engineering.
. . . works in the field gathering data.
. . . works with field data in an office.

PUPIL PERFORMANCE OBJECTIVES

LIFESTYLE

. . . list job options a person may have and how they affect the lifestyle of an individual.

ATTITUDES AND APPRECIATIONS

. . . identify any policies and procedures which a student would follow in his job or at school.

CAREER INFORMATION

. . . write a short summary stating why irrigation systems are used more in the United States now than they were fifty years ago and how the demand for workers in irrigation has been affected.

EDUCATIONAL AWARENESS

. . . state reasons why a person interested in a career as an irrigation engineer would need to know and understand geography and science.

INSTRUCTIONAL ACTIVITIES

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. Use discretion as to which activities to use for the whole class and which can be delegated to small groups or individuals to be shared with the class at a later time. Develop additional activities which can add to the child's understanding of this unit.

ACTIVITIES to develop the CAREER DEVELOPMENT CONCEPTS

1. Have students make a map of our country showing the two areas according to rainfall (humid East and arid West). Show the major crops grown in each area. Research some of the crops grown throughout the U. S. to see how much water they need and determine which crops would probably need to be irrigated if they grew in dry areas. Chart the crops according to water requirements and temperature requirements.

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

2. Have the class make a bulletin board with pictures and reports explaining some of the methods of irrigation (furrow, underbed, basin,

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

flooding, sprinkler, and other methods). Be sure that each report includes what determines the method used. What subject areas make it easier to understand these methods?

3. Divide the class into various groups to research early methods of irrigation. Have some groups research the irrigation systems of the Egyptians, Persians, Chinese, Romans, etc. Let others research the birth of irrigation in America and include the role of the Mormons. Have the students make drawings on large rolls of paper to illustrate their finds. Have someone research Hammurabi, the great builder of the Babylonian Empire, and find out how he was involved with irrigation systems. Have some groups research present-day irrigation systems in foreign countries. What factors influenced the demands for irrigation which affected the decrease or increase in numbers of irrigation engineers.

Technological, economic, social, and political factors influence supply and demand of jobs.

Career Information

4. Visit, if possible, a nearby farm which uses an irrigation system. Interview the farmer, questioning him about such things as why he needs this system, the source of water supply, the type of irrigation system, the length of the system's operation, plans for continuing operation, crops irrigated, and the increase in crop production as a result of this system. What was his method of procuring an irrigation system? Were there certain policies and procedures followed by the company that provided the system?

A given work setting requires certain policies and procedures.

Attitudes and Appreciations

5. Have the students do various experiments to demonstrate what happens when water falls on the pavement, rooftops, and soil; how different kinds and amounts of plant cover help water soak into the soil; what happens to the water once it enters the soil; and how plants take water from the ground. Learn what a

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

tensionmeter is and, if possible, watch one being used. A few examples of such experiments follow.

a. Find out how fast soils take in water by getting some large cans and cutting the bottom out of one end of the can just below the rim, leaving a sharp edge that will drive into the ground easily. Cut the other end, leaving the rim on. Mark the outside of each can two inches from the bottom of the end without the rim. Place a board on each can and tap with a hammer until the two-inch mark is level with the ground. Add a quart of water to each and record the following information: place, condition of the soil, presence of leaves or sticks, time when quart of water was added, and amount of water that moved downward at the end of each minute for the first ten minutes or every hour.

b. Have the class go outside after a rain following a dry period. Dig into different soils, noting into which soil the water has soaked the deepest.

c. See how much water different soils hold by having the class do the following: Obtain two cans of equal size, two 18-inch squares of cloth, some heavy string, a scale that weighs up to 64 ounces or 2,000 grams, and a container of water. Put equal amounts of soil in the two cans. Get some garden or field soil that is hard and cloddy and some soil that is crumbly and free from clods that has been obtained from a pasture or field where grasses and legumes have grown. Dry the soils, empty the two soils onto separate cloths, and tie the cloths. Weigh each sample and record the weight. Saturate each bag of soil in water. Remove from the water and allow to drain off for a few minutes. Then weigh again and record the amounts.

d. Obtain two identical plastic detergent or bleach bottles that will fit upside down into the openings of fruit jars. Cut off the bottoms of the plastic bottles, cover the tops with cloth, and turn them upside down into the fruit jars. Fill each 2/3 full with two different types of soil. Pour a pint of water into each and see how long it takes the water to drip into the jars and how much water comes from each soil.

e. Perform the ball test to see how much moisture is in soil. Squeeze a handful of soil very firmly and see if it is dry and flows through the fingers, is somewhat crumbly but holds together, forms a weak ball, or forms a ball and is very pliable.

6. Have the class make a map of the state, locating the major rivers, streams, reservoirs, and lakes where water could be obtained. Investigate the reasons for any constructions which are man made. Do they help any agricultural businesses?

Technological, economic, social, and political factors influence supply and demand of jobs.

Career Information

7. Explain the hydrologic cycle (water cycle) to the students, showing what happens to precipitation when it falls to the earth. Have students make drawings of the cycle. Compare to man's methods of getting water from the ground.

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

8. Ask for written reports on the effects of weather and natural disasters on crops. Why would an irrigation engineer need to know these things? What factors influence more agricultural irrigation? How will these factors influence the number of jobs available at a given time?

Technological, economic, social, and political factors influence supply and demand of jobs.

Career Information

9. Invite an irrigation engineer to visit the classroom if possible. If not, write a letter asking him to complete an enclosed

Relationships exist between desired lifestyles and career monetary rewards.

Lifestyle

questionnaire. Find out such things as what types of material does he use in making plans and designs; does he work inside or outside most of the time; what courses did he take in school; did he have much trouble locating a job after he graduated; what does he like the most and the least about his job; are there any standard procedures for developing an irrigation system; and is the pay any different if he works in the field or office, if he travels, or if he stays in one place?

10. List plants which grow in the desert, indicating those which are used by man and for what purpose. Could the desert be made more productive to our society? How?

Technological, economic, social, and political factors influence supply and demand of jobs.

Career Information

11. Develop a class project to find out the role of the U. S. Government in establishing, constructing, and operating major irrigation systems. Prepare a booklet with summaries explaining laws that have been passed pertaining to irrigation and telling why it was necessary for each to be passed. Include summaries about some of the major projects developed by the government such as Hoover Dam. Would the policies and procedures used by a private company be different from a government agency?

A given work setting requires certain policies and procedures.

Attitudes and Appreciations

12. Have a group of students develop a vocabulary list of words familiar to an irrigation engineer. Examples are shadoof, reservoirs, feeder, laterials, checks, and terrace.

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

EVALUATION ACTIVITIES

1. Have role playing of at least three irrigation engineer families. One engineer is married and just out of school. One is about 35 years old, married, and has three children. The other is about 50

Relationships exist between desired lifestyles and career monetary rewards.

Lifestyle

years old, married, and the children are grown. Each has been offered two jobs: one job is working in an office for an engineering company; the other job is to work in the field with a considerable amount of traveling and the possibility of extra bonuses. How will each family head decide? What factors will affect this decision? Relate this to the lifestyle chosen by the families in the class.

2. Have the students write a paragraph about the factors which have made possible the occupation in which their fathers or mothers are engaged.

Technological, economic, social, and political factors influence supply and demand of jobs.

Career Information

3. Have the students compare the policies and procedures used by students in their classroom for completion of classroom work for a grade and completion of any work they do or might do for money? Are there any differences? If so, what and why?

A given work setting requires certain policies and procedures.

Attitudes and Appreciations

4. Give the students an opportunity to write on the topic, "I dream that someday I'll be . . . " Have them identify skills and knowledge in subject areas which they know are needed to make this dream come true.

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

RESOURCES

Books

Cantor, Leonard M. A World Geography of Irrigation. Oliver and Boyd, Tweeddale Court, Edinburgh and 39A Welbeck Street, London, 1967.

Huffman, Roy E. Irrigation Development and Public Water Policy. The Ronald Press Company, N. Y., N. Y., 1953.

Lowdermilk, W. C. Conquest of Land Through 7,000 Years. U. S. Conservation Service.

Miller, M. F. Water and Its Conservation. University of Missouri, College of Agriculture, Agricultural Experimental Station, Bulletin #577, Columbia, Missouri, 1952.

An Outline for Teaching Conservation in Elementary Schools. U. S. Dept. of Agricultural Soil Conservation Service.

Conservation Irrigation in Humid Areas. Agriculture Handbook #107. Soil Conservation Service, U. S. Department of Agriculture.

Engineering - A Creative Profession. Engineers' Council for Professional Development, 345 East 47th Street, N. Y., N. Y. 10017.

Farm Irrigation Systems. Bulletin #629, University of Missouri, College of Agriculture, Agricultural Experimental Station, Columbia, Missouri.

Planning for an Irrigation System. American Ass'n. for Vocational Instructional Materials, Athens, Georgia.

Water Management, Agricultural and Ground-Water Supplies. R. L. Nace, U. S. Geological Survey Circular #415, 1960.

Audio-Visuals

Desert Farming. Arms Instructional Media Services, Inc., 1967. Film.

Food from the Desert. Kleinberg Films, 1967. Film.

Irrigating Field Crops. U. S. National Audiovisual Center. Film.

Making the Desert Green. Encyclopedia Britannica Educational Films, Inc., 1966. Film.

Water. U. S. Department of Agriculture. Film.

Free Materials

Educators Guide to Free Science Materials. Educators Progress Service, Incorporated, Randolph, Wisconsin, 1970.

Audio-Visuals

1. Water, Modern Talking Picture Service. Film.

Educators Guide to Free Social Studies Materials. Educators Progress Service, Incorporated, Randolph, Wisconsin, 1970.

Audio-Visuals

1. Arizona and Its Natural Resources, Bureau of Mines. Film.
2. California and Its Natural Resources, Bureau of Mines. Film.
3. Chelan County, Washington, Chelan County Public Utility District #1. Film.
4. Conquest of the Soil, Radim Films, Inc. Film.
5. Nevada and Its Natural Resources, Bureau of Mines. Film.
6. Washington and Its Natural Resources, Bureau of Mines. Film.

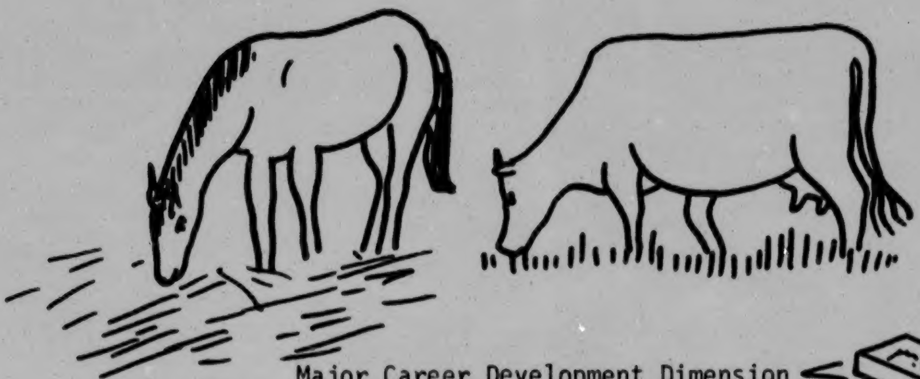
Organizations

American Society of Agricultural Engineers, 420 Main Street, Joseph, Michigan 40985.

Bureau of Reclamation, Department of Interior, Washington, D. C.

Division of Waterways, Department of Public Works and Buildings, Springfield, Illinois.

National Society of Professional Engineers, 2029 K Street, N. W., Washington, D. C. 20006.



Major Career Development Dimension
DECISION MAKING

Occupational Study
LIVESTOCK PRODUCER

Today students will be granted three wishes. One wish will grant something to eat, one will give an animal they would like to have, and the third will grant what they would like to be. Did the students ask for hamburger, French fries, and a milk shake and a horse? Is the occupational choice an animal-related one? Using student interest in food and pets, this module explores an occupation which produces livestock for food and recreation. Because many of the decisions made by the livestock producer are chain-reacting and visible, this module was developed around the decision-making concept.

BEFORE YOU BEGIN

The occupational area considered in this study is that of AGRICULTURAL PRODUCTION. The occupations in this area are concerned with the growing of crops or raising of livestock for the purpose of increasing the quantity of quality products and offering those crops, livestock, or products for sale.

This unit deals with the improvement of production through better breeding, which is one aspect of animal production. At the same time, an awareness of the occupation of a LIVESTOCK PRODUCER is developed.

The developmental CAREER DEVELOPMENT DIMENSION for this particular study is that of DECISION MAKING. The subconcept *decision making can precipitate chain reactions* is ideal to use within the study of the LIVESTOCK PRODUCER because of the affect his decisions have in producing quality stock. These chain reactions can be shown very graphically in this study.

The other concepts are of an interacting nature in this study. The student should begin to understand that *knowledge and skills in subject areas are helpful in occupational competence,* that *occupations have their own work settings,* and that *specialized occupations result in an interdependent society.*

Subject matter which is fused in the activities is listed so that the teacher might identify some of the educational knowledge and skills necessary to research and/or perform a particular occupational task during this study and/or on the job. The subject matter used is at or below the grade for which the module is written.

The occupational information given is intended to give the teacher a brief overview of some of the tasks and requirements of a person in this particular occupation. At the end of each module, a list of resources is given for additional information.

Pupil performance objectives are written for each of the career development concepts. For the acquisition of those objectives, subject matter and occupational information relevant to the level of the child's development are used. The objectives contain only a statement of terminal behavior.

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. The teacher may wish to use some of the activities for the whole class, and others may be delegated to small groups or individuals. These activities form a nucleus around which interest can be stirred for the child and around which the teacher will want to develop additional activities.

The evaluation activities suggest various ways to evaluate the child's level of conceptualization of the career development concepts as they are

stated in the pupil performance objectives. Because the classroom teacher is the best qualified evaluator in her classroom, she should decide HOW a given knowledge or skill shall be demonstrated, and the QUALITY and QUANTITY of knowledge or skill required for a particular child or group of children. The writers of these materials have also made the assumption that the teacher will decide whether she uses all or some of the suggested activities or some activities which she adds to the unit. These factors will affect the pupil evaluations.

CAREER DEVELOPMENT CONCEPTS

DECISION MAKING

Major Concept	Life involves a series of choices leading to career commitments.
Subconcept	*Decision making can precipitate chain reactions.*

EDUCATIONAL AWARENESS

Major Concept	Educational skills and experiences are related to the achievement of career goals.
Subconcept	*Knowledge and skills in subject areas are helpful in occupational competence.*

ATTITUDES AND APPRECIATIONS

Major Concept	Society is dependent upon the productive work of individuals.
Subconcept	*Specialized occupations result in an interdependent society.*

CAREER INFORMATION

Major Concept	Basic career information will aid in making career-related decisions.
Subconcept	*Occupations have their own work settings.*

INFUSED SUBJECT MATTER

Mathematics

1. Costs
2. Comparisons
3. Computing input and output
4. Weights
5. Stock market prices
6. Graphs

Language Arts

1. Interviewing
2. Reports
3. Listening
4. Reading
5. Observing

Science

1. Nutrition
2. Reproduction
3. Genetics
4. Diseases
5. Insecticides

Social Studies

1. Production of livestock map
2. Pictomap
3. Charts and tables
4. Geographic regions
5. History of farm to market
6. Animal housing
7. Stock market
8. Economics

OCCUPATIONAL INFORMATION

Agricultural Production

Agricultural production is the growing of crops or raising of livestock for the purpose of increasing the quantity of quality products and offering those crops, livestock, or products for sale. High agricultural production requires people with a high degree of knowledge and skill in the plant or animal sciences and/or business management.

Sample Occupation: A Livestock Producer

. . . breeds, feeds, and raises livestock for the commercial production of meat.

. . . raises livestock best suited to soil, climate, and market conditions of the area.

. . . is responsible for year-round operation of a farm.

. . . combats animal diseases and insect pests by dusting, spraying and other fumigation methods.

. . . applies knowledge of animal husbandry to plan and develop sound breeding programs of livestock.

. . . is responsible for the operation, maintenance, and/or repair of machinery, equipment, buildings, and structures.

. . . grows cash crops.

. . . keeps records of supplies, purchases, sales, planting, breeding, and production figures.

. . . primarily works out-of-doors in all kinds of weather.

. . . works long hours at certain times of the year.

. . . works until the job is done.

. . . needs good business sense.
. . . needs an education ranging from high school level to university level, depending on experience and type and size of operation.

PUPIL PERFORMANCE OBJECTIVES

DECISION MAKING

. . . outline some of the chain reactions which will occur when a career decision is made.

. . . write a paragraph explaining the affect of actual experiences versus daydreaming experiences on making career decisions.

. . . outline the possible chain reactions which may occur when a student is given the opportunity to vacation on a ranch.

EDUCATIONAL AWARENESS

. . . identify math skills needed by a livestock producer.

. . . identify language skills needed by a livestock producer.

. . . identify science skills needed by a livestock producer.

. . . identify social studies skills needed by a livestock producer.

ATTITUDES AND APPRECIATIONS

. . . list some things which the livestock producer produces for society.

. . . list some things the livestock producer must get from society.

CAREER INFORMATION

. . . identify several types of work settings in which a livestock producer might work.

INSTRUCTIONAL ACTIVITIES

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. Use discretion in which activities to use for the whole class and which can be delegated to small groups or individuals to be shared with the class at a later time. Develop additional activities which can add to the child's understanding of this unit.

ACTIVITIES to develop the CAREER DEVELOPMENT CONCEPTS

1. Place a hamburger, French fries, and a milk shake on a table. Discuss the origin of each with the class. Have the students list workers involved in getting the hamburger to them, thus introducing the livestock producer, who provides meat for America. Consider the affects of a shortage of livestock or an ample supply. What are some decisions a producer would have to make? Are any of them chain reacting?

Decision making can precipitate chain reactions.

Decision Making

2. Have the students decide whether they wish to study one animal or many animals by organizing themselves into a large group or small groups. Help them to see how their decisions precipitate a chain reaction. The livestock animal should be selected from cattle, horses, sheep, swine, or poultry.

Decision making can precipitate chain reactions.

Decision Making

3. Have the following information gathered for the animal under study:

   a. What qualities are needed to make this animal a good producer?

   b. How has breeding improved this stock? Identify some of the breeds and compare purposes for which they are bred.

   c. What kinds of feed are used? Where is the feed produced?

   d. What are some of the health problems? How are they handled?

   e. What kind of special housing is provided for a particular animal?

   f. How are the animals marketed? What kinds of transportation are involved? How does the producer know when to sell his product? Why does the market price change during the course of a year?

   Identify how various decisions made in each area affect the production of livestock. Would these decisions precipitate a chain reaction?

Decision making can precipitate chain reactions.

Decision Making

4. Ask the class to make a display of different types of grains such as timothy, alfalfa, clover, and corn. Identify the grains and tell the importance of each to proper nutrition of livestock (i.e., corn adds fat).	*Decision making can precipitate chain reactions.* **Decision Making**
5. Introduce reproduction with a film or filmstrip about reproduction of mammals. Study the fertilization, gestation period, pregnancy, and birth of livestock. Committees could research each aspect including prenatal and postnatal care of the animal they have selected to study.	*Decision making can precipitate chain reactions.* **Decision Making**
6. Introduce the concept of genetics and help students see how selective breeding can result in a desired coloring or marking. Do some simple diagramming of how genes combine to determine a certain characteristic.	*Decision making can precipitate chain reactions.* **Decision Making**
7. Purchase some pairs of white mice, and plan some controlled experiments. If possible, have the students determine and keep records of the lineage, vary the kinds and amounts of food rations, and draw some conclusions to relate to livestock production.	*Decision making can precipitate chain reactions.* **Decision Making**
8. Have students develop a project to find where and how to buy livestock. Keep a record of the information gathered along with the costs of livestock of different ages, breeds, etc. Make comparisons of prices and consider the qualities that make the cost differences.	*Decision making can precipitate chain reactions.* **Decision Making**
9. Have the students interview and/or spend a day with a livestock producer. Plan beforehand the general questions which the class will want to know. Examples: What kind of animal or animals does he produce? Why did he select that particular kind? Does he have to depend on any other people for supplies and services? What happens	*Decision making can precipitate chain reactions.* **Decision Making**

to his product? Why is he in this business? Are there some things he really likes or dislikes about his job? Does he have to make many decisions? Do those decisions have chain reactions? How did he decide to become a livestock producer? After the decision was made, what did he have to do to become a livestock producer? Does he continue to make decisions which affect his career?

10. Have a 4-H member report to the class how he pursued his livestock project. Emphasize the influence of his decision to raise a calf or other animal on his career plans.

Decision making can precipitate chain reactions.

Decision Making

11. Encourage some interested student to investigate occupations which are supportive to the production of livestock such as the veterinarian, farm adviser, agricultural equipment salesman, feed lot worker, feed mill operator, or feed company operator. Have students make a bulletin board display showing the interdependence of workers. If possible, show how a decision made by one worker will affect the work of others.

Decision making can precipitate chain reactions.

Decision Mak[illegible]

12. Have some students interested in the medical and scientific field investigate and report to the class some of the health problems faced by a livestock producer. How does he use preventive medicine? Have any of the drugs used on animals affected the consumer? What pests present problems? What insecticides or sprays are used?

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

13. Ask students to make a chart showing the products and/or uses of each breed of animal. Past and present uses could be shown.

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

14. Have the class figure the amount of feed required and the cost of the feed using the following information: In Illinois, the average daily gain for steers from weaning at 150 pounds to slaughter is 2¼ pounds. At one year, the heifer should weigh about 850 pounds. A calf eats 8 pounds of feed to produce one pound of gain.

Knowledge and skills in subject areas are helpful in occupational competence.
Educational Awareness

15. Have the students prepare a diagram of the stomach of the animal selected. Identify parts, and tell how each operates.

Knowledge and skills in subject areas are helpful in occupational competence.
Educational Awareness

16. Have the class investigate how a producer knows how many animals to raise and when he should sell them. What are some factors which influence his decisions? Listen to the stock market report for two weeks. Record and graph the findings.

Decision making can precipitate chain reactions
Decision Making

17. Ask the class to listen to the farm report on radio and T.V. or read the agricultural news in newspapers and magazines. What kinds of information do they give? Of what importance are they to the farmer? What kinds of ads do they have? Are they different from ads usually seen or heard? Are the topics different according to the time of year? Why?

Knowledge and skills in subject areas are helpful in occupational competence.
Educational Awareness

18. Have the students make a display of all the products and purposes of the animal which is being studied. Example: from milk to leather.

Specialized occupations result in an interdependent society.
Attitudes and Appreciations

19. Instruct the class in constructing models or drawings of types of housing provided for the various kinds of livestock. Have a student prepare a report giving the reasons for its uniqueness.

Specialized occupations result in an interdependent society.
Attitudes and Appreciations

20. Prepare a diagram with the class to show some of the supplies and services the livestock producer would not provide on his own farm.

Specialized occupations result in an interdependent society.
Attitudes and Appreciations

21. Have each child select an animal from those sold on the livestock market. Have him check the selling price of that animal according to the livestock market report each day. Using play money, have some children be buyers or sellers. Help the children to understand what happens if all, some, or none sell livestock in a given week.	*Decision making can precipitate chain reactions.* **Decision Making** *Knowledge and skills in subject areas are helpful in occupational competence.* **Educational Awareness**
22. Investigate in class the production cost per pound of meat and the selling cost. What factors are included in the production cost and marketing cost?	*Knowledge and skills in subject areas are helpful in occupational competence.* **Educational Awareness**
23. Have a report prepared using diagrams of the various animals produced for meat and show the location of the various cuts. Determine why some cuts are more expensive.	*Knowledge and skills in subject areas are helpful in occupational competence.* **Educational Awareness**
24. Use with the class a map of the United States and a geography book to locate the areas that are main producers of a particular animal. Identify how production settings would vary from one area to another. Identify factors which would create these differences. Determine factors which influence the production of certain livestock in certain areas.	*Occupations have their own work settings.* **Career Information**
25. Have the students trace the history of changes in how the farmer gets livestock to the consumer. What factors have had the greatest effect in getting the most meat to the consumer	*Occupations have their own work settings.* **Career Information**
26. Discuss with the class what it means to buy meat on the "hoof"?	*Occupations have their own work settings.* **Career Information**
27. Have the class define a "feed lot." What is its purpose? What is feed lot pollution? What can be done about it?	*Occupations have their own work settings.* **Career Information**

28. Have students interview people who work to determine some career decisions they had to make. Consider the following factors in the light of chain reactions:

Education required
Experience required
Finances needed
Aptitudes developed
Manpower demands

EVALUATION ACTIVITIES

1. Have the student identify some decisions he made during this study. Did his decisions influence his considerations for a career? When he has made a career decision, what other decisions will follow? If he has not made a career decision, how will that decision affect other actions?

Decision making can precipitate chain reactions.

Decision Making

2. Have the students write a story about a week's vacation on a ranch. Discuss the activities in groups to determine how real their ideas are. Poll the students who have visited a ranch or farm or would like to. Do they think this kind of experience would influence any of their career decisions. Would actual experiences on the job affect a person's career choice?

Decision making can precipitate chain reactions.

Decision Making

3. Have the students prepare a diorama showing the many work settings where livestock would be produced from range lands to mountains, from rural areas to urban areas.

Occupations have their own work settings.

Career Information

4. Ask the class to identify some of the subject matter skills already seen and compare and/or contrast with those a livestock producer would use in his work.

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

5. Make a simple diagram with the class to show the interdependence of the farmer and consumer.

Specialized occupations result in an interdependent society.

Attitudes and Appreciations

RESOURCES

Books

Balch, Glenn. The Book of Horses. Four Winds Press, N. Y., N. Y., 1958.

Brady, Irene. America's Horses and Ponies. Houghton Mifflin Company, Boston, 1969.

Buehr, Walter. Food From Farm to Home. William Morrow & Company, Inc., New York, N. Y.

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Byerly, Theodore C. Livestock and Livestock Production. Prentice Hall, Inc., 1963.

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Darling, Louis. Chickens and How to Raise Them. William Morrow & Company, Inc., New York, N. Y., 1955.

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Henry, Marguerite. All About Horses. Random House, New York, N. Y., 1962.

Hogner, Dorothy Childs. Barnyard Family. Oxford University Press, New York, N. Y., 1948.

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Lent, Henry B. Agriculture U.S.A. E. P. Dutton & Company, Inc., New York, N. Y., 1968.

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Schloat, G. Warren. The Wonderful Egg. Charles Scribner's Sons, New York, N. Y., 1952.

Seibert, Jerry. Animals on a Farm. Encyclopedia Britannica Press, New York, N. Y., 1964.

Audio-Visuals

Cattleman - A Ranger's Story. Encyclopedia Britannica Educational Corporation, 1964. Film (2nd ed.).

The Cow. Churchhill Films, 1968. Film.

Dairy Belt. Indiana University, 1962. Film.

The Farm Community. Encyclopedia Britannica Educational Films, Inc., 1969. Film.

Food and Food Helpers. Singer Society for Visual Education, Inc., 1972 (cat.). Multimedia.

The Foods We Eat. Singer Society for Visual Education, Inc., 1971. Sound filmstrips.

Genetics - Improving Plants and Animals. Coronet Films, 1963. Film.

The Horse Family. International Film Bureau, 1966. Film.

Horse Farm. Grover-Jennings Productions, 1960. Film.

Horses and Their Ancestors. McGraw Hill Textfilms, 1962. Film.

In Good Hands. Farm Film Foundation, 1961. Film.

Meat -- From Range to Market. Encyclopedia Britannica Educational Films, Inc., 1973 (cat.). Film.

Our Changing Way of Life -- Cattleman, A Rancher's Story. Encyclopedia Britannica Educational Films, Inc., 1973 (cat.). Film.

Pigs. Churchhill Films, 1967. Film.

Poultry Farm to Market. Arms Instructional Media Service, Inc., 1966. Film.

Poultry on the Farm. Encyclopedia Britannica Educational Corporation, 1960. Film (2nd ed.).

Rumen Story. Ralston Pruina Co., Film.

Sheep and Goats. International Film Bureau, 1966. Film.

The Sheep Rancher. Encyclopedia Britannica Educational Films, Inc., 1968. Film.

Where Does Our Meat Come From? Coronet Films, 1960. Film.

Free Materials

Educators Guide to Free Science Materials. Educators Progress Service, Incorporated, Randolph, Wisconsin, 1970.

Audio-Visuals

1. *Atomic Zoo*, United States Atomic Energy Commission. Film.
2. *Chromosomes -- Blueprints for Life*, Sterling Movies. Film.

Educators Guide to Free Social Studies Materials. Educators Progress Service, Incorporated, Randolph, Wisconsin, 1970.

Audio-Visuals

1. *Arizona and Its Natural Resources*, Bureau of Mines. Film.

Elementary Teachers Guide to Free Curriculum Materials. Educators Progress Service, Incorporated, Randolph, Wisconsin, 1970.

Printed Materials

1. *Steps to Success*, American Shorthorn Association.
2. *The Story of Meat*, American Meat Institute.

Pictures of . . . (Set) (Order set or individual titles), Canada Department of Agriculture, Head Distribution Unit, Information Division, Room 139, Sir John Carling Building, Central Experimental Farm, Ottawa, Ontario, Canada.

Beef Cattle
Breeds of Chickens
The Canadian Broiler Industry
The Canadian Egg Industry
The Canadian Turkey Industry
Cheese Making
Dairy Cattle
Ducks
Geese
Horses
Maple Syrup
Northern Agriculture
Sheep
Swine
Tobacco in Canada

Organizations

Agricultural Publications Office, 123 Mumford Hall, Urbana, Illinois 61801.

Brown Swiss Cattle Breeder's Association, P. O. Box 1028, Beloit, Wisconsin 53511.

Canada Department of Agriculture, Head Distribution Unit Information Division, Room 139, Sir John Carling Building, Central Experimental Farm, Ottawa, Ontario, Canada.

Food and Agriculture Organizations of the United Nations, Office of Public Information, Liaison Office for North America, 1325 C Street, S. W., Washington, D. C. 20437.

State of Illinois Department of Agriculture, Division of Meat, Poultry, and Livestock Inspection, Emmerson Building - Fairgrounds, Springfield, Illinois 62706.

U. S. Department of Agriculture, Agricultural Research Center, Educational Services Branch, Beltsville, Maryland 20705.

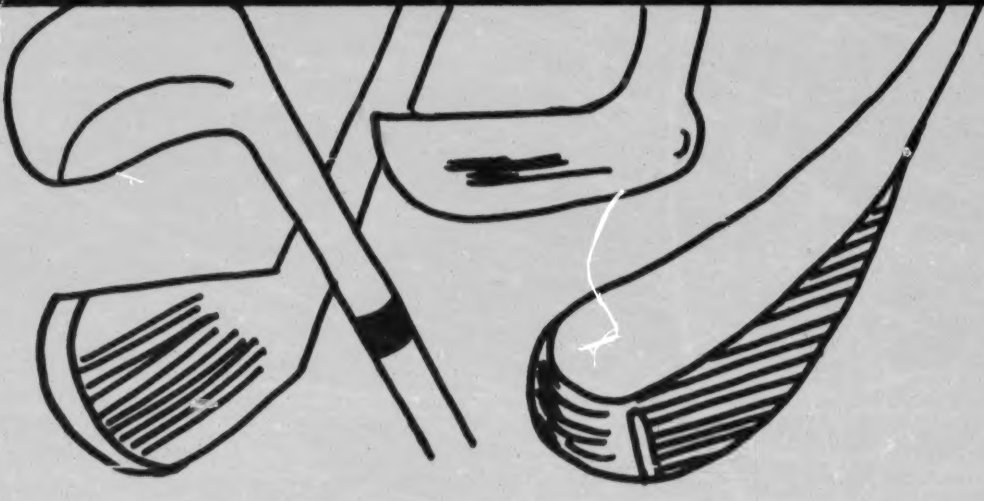
U. S. Department of Agriculture Co-operative Service Publications, Washington, D. C. 20250.

U. S. Department of Agriculture, Office of Information, Publications Division, Washington, D. C. 20250.

Major Career Development Dimension
DECISION MAKING

Occupational Study
GREENSKEEPER

Nearly every child has seen the beautiful greens at a golf course or the green grass in a park. Some children earn extra money by mowing lawns in their neighborhoods. What must be done to keep the grass so green and inviting? By learning about some of the skills and techniques used by the greenskeeper, perhaps we can have a "greener America." In order to make quality career decisions, one must set some goals. By looking at goals established by the greenskeeper, perhaps the child will have a clearer understanding of the meaning of "setting one's goals" and the decisions and work required for their attainment.



BEFORE YOU BEGIN

The occupational area considered in this study is that of ORNAMENTAL HORTICULTURE. The occupations in this area are involved in the culture, production, and maintenance of plants; the principles and practices involved in locating, planting, and maintaining turf, plants, and shrubs; and the selection and placement of nonliving materials for the beautification of the indoor and outdoor environment.

This unit deals with the management and growth of grasses to be used for turf, which is one aspect of the area of ORNAMENTAL HORTICULTURE. It considers the types of grasses, shrubs, trees, fertilizers, and equipment necessary for a beautiful golf course, park, or recreation area while developing an awareness of the specific occupation of the GREENSKEEPER.

The developmental CAREER DEVELOPMENT DIMENSION for this particular study is that of DECISION MAKING. The concept that *setting goals can be enhanced by analyzing decision-making processes* is particularly important in the study of the greenskeeper because many of his activities have long-range results. He makes many decisions and needs to be able to analyze his previous decisions in order to set new goals.

The other concepts in this study are of an interacting nature. The student should begin to understand that *completion of a worthwhile task has value for the worker and for society,* that *occupations require the use of specific materials and equipment,* and that *knowledge and skills in subject areas are helpful in occupational competence.*

Subject matter which is fused in the activities is listed so that the teacher might identify some of the educational knowledge and skills necessary to research and/or perform a particular occupational task during this study and/or on the job. The subject matter used is at or below the grade for which the module is written.

The occupational information given is intended to give the teacher a brief overview of some of the tasks and requirements of a person in this particular occupation. At the end of each module, a list of resources is given for additional information.

Pupil performance objectives are written for each of the career development concepts. For the acquisition of those objectives, subject matter and occupational information relevant to the level of the child's development are used. The objectives contain only a statement of terminal behavior.

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. The teacher may wish to use some of the activities for the whole class, and others may be delegated to small groups or individuals. These activities form a nucleus around which interest can be stirred for the child and around which the teacher will want to develop additional activities.

The evaluation activities suggest various ways to evaluate the child's level of conceptualization of the career development concepts as they are stated in the pupil performance objectives. Because the classroom teacher is the best qualified evaluator in her classroom, she should decide HOW a given knowledge or skill shall be demonstrated, and the QUALITY and QUANTITY of knowledge or skill required for a particular child or group of children. The writers of these materials have also made the assumption that the teacher will decide whether she uses all or some of the suggested activities or some activities which she adds to the unit. These factors will affect the pupil evaluations.

CAREER DEVELOPMENT CONCEPTS

DECISION MAKING

Major Concept	Basic components of the decision-making process can be applied to the establishing of personal goals and the making of career-related decisions.
Subconcept	*Setting goals can be enhanced by analyzing decision-making processes.*

ATTITUDES AND APPRECIATIONS

Major Concept	Society is dependent upon the productive work of individuals.
Subconcept	*Completion of a worthwhile task has value for the worker and for society.*

CAREER INFORMATION

Major Concept	Basic career information will aid in making career-related decisions.
Subconcept	*Occupations require the use of specific materials and equipment.*

EDUCATIONAL AWARENESS

Major Concept	Educational skills and experiences are related to the achievement of career goals.
Subconcept	*Knowledge and skills in subject areas are helpful in occupational competence.*

INFUSED SUBJECT MATTER

Mathematics
1. Measurement
2. Tables of data
3. Comparing graphs

Language Arts
1. Reporting
2. Interviews
3. Research and use of library
4. Scientific and technical vocabulary
5. Role playing

Science
1. Recording and interpreting data
2. Effects of sun and water on growth
3. Rainfall recording
4. Weather forecasting
5. Photosynthesis
6. Soil conservation
7. Erosion

Social Studies
1. Geographic regions
2. Climate of regions
3. Map making skills

OCCUPATIONAL INFORMATION

Ornamental Horticulture

Ornamental Horticulture deals with the culture, production, and maintenance of plants; the establishment, maintenance, and management of Ornamental Horticulture enterprises; the principles and practices involved in locating, planting, and maintaining turf, plants, and shrubs; and the selection and placement of nonliving materials for the beautification of the indoor and outdoor environment.

Sample Occupation: A Greenskeeper

. . . manages a golf course, park, or recreational area.
. . . maintains a golf course, park, or recreational area.
. . . has extensive knowledge of grasses, trees, and shrubs.
. . . has knowledge of agricultural chemicals used to perform maintenance duties for golf courses, recreational areas, and parks.
. . . cuts, verticuts, fertilizes, sprays, aerifies, topdresses, and cultures turf grasses.
. . . works outdoors.
. . . understands irrigation practices.
. . . operates, maintains, and repairs equipment such as mowers, aerifiers, tractors, sprayers, spreaders, and often even golf carts.
. . . is responsible often for keeping records, preparing budgets, and hiring, firing, and supervising staff.
. . . has a general knowledge about weather.
. . . prepares the ground for new greens and plants new shrubs.
. . . has a knowledge of weeds, insects, and plant diseases.
. . . should have two to three years of college with emphasis on horticulture.
. . . has good health because of physical nature of work.

. . . has a pleasing personality and ability to work with people.
. . . has decision-making ability.
. . . assists sometimes the recreation division in provision of golf instruction.

PUPIL PERFORMANCE OBJECTIVES

DECISION MAKING

. . . list reasons why analyzing previous decisions can improve the setting of future goals.

ATTITUDES AND APPRECIATIONS

. . . list some tasks a greenskeeper performs that are worthwhile to society and that are worthwhile to the worker.

CAREER INFORMATION

. . . describe some of the specific materials and equipment the greenskeeper would use.

EDUCATIONAL AWARENESS

. . . identify some of the knowledge and skills that a greenskeeper uses in his occupation.

INSTRUCTIONAL ACTIVITIES

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. Use discretion as to which activities to use for the whole class and which can be delegated to small groups at a later time. Develop additional activities which can add to the child's understanding of this unit.

ACTIVITIES	to develop the CAREER DEVELOPMENT CONCEPTS
1. Take a field trip to a local golf course. Ask the greenskeeper to tell the students about his occupation. Was this occupation always his goal? What factors helped him make the decision to become a greenskeeper? Did he consider his capacities, interests, and values in making this decision? Did he know anything about the occupation before choosing it? Did he feel that this occupation would fit his lifestyle? Were there any key people who helped him decide on this	*Setting goals can be enhanced by analyzing decision-making processes.* **Decision Making**

occupation? Was it easy to reach the goal after the decision was made? How did he prepare for employment?

2. Have the children work together to make a list of personality characteristics that would be valuable to a greenskeeper. Mark those characteristics which are important to workers who make many decisions and set many goals.

Setting goals can be enhanced by analyzing decision-making processes.
Decision Making

3. Organize groups and let each group decide on a method to describe the job of a greenskeeper such as making a mural, giving a puppet show, etc. Let each group set its own goal and proceed on its own. Give suggestions only when necessary. Have each group record what decisions were made, why each was necessary, and what factors influenced each decision. Have the groups tell how each decision helped or hindered them in reaching their goal and if any factor in the decision-making process influenced them to modify or change their goal.

Setting goals can be enhanced by analyzing decision-making processes.
Decision Making

4. Use a quart milk carton, ¼ cup of rye grass seed and one quart of topsoil for each pair of students. Let them grow the grass and, when it is grown, demonstrate the value of grass to prevent soil erosion. Use a quart of plain soil and the quart with grass. Pour water over the soil and illustrate how it washes away the plain soil but just trickles through the soil with grass in it.

Completion of a worthwhile task has value for the worker and for society.
Attitudes and Appreciations

5. Ask the class to make a collection of equipment and materials used by a greenskeeper. Label each and make a display. Pictures may be substituted for items too large to be brought in. Discuss the use of each.

Occupations require the use of specific materials and equipment.
Career Information

6. Ask students to collect a variety of grass seed. Examine and label each type. Note the differences in size, shape, and color. Use

Knowledge and skills in subject areas are helpful in occupational competence.
Educational Awareness

a microscope or hand lens to examine seeds that have been dissected.

7. Collect some top soil. Put holes in the bottom of some aluminum trays and place the soil in them. Plant grass seed of various kinds (Blue grass, Windsor, etc.) in the trays. Be sure to plant two trays of each kind. Do some experimenting by placing the trays in various windows around the school. Use artificial lighting on some. Be careful to vary conditions on the trays with the same type of seeds. Compare the seedlings, record the results using a chart or graph, and discuss with the class.

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

8. Experiment with different fertilizers on sod brought from the students' home lawns. Use different combinations of nitrogen, phosphorus, and potassium, such as 30-3-10 or 20-4-6.

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

9. Assign sections of the school lawn to students to care for. Use small stakes to distinguish each section. Direct students to do experiments with their plot, such as application of fertilizer, insecticide, and weed control.

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

Occupations require the use of specific materials and equipment.

Career Information

10. Have the class collect and identify different varieties of grasses. Research which grass is best for a beautiful lawn, play area, golf course, etc. Find out why it is best.

Knowledge and skills in subject areas are helpful in occupation competence.

Educational Awareness

11. Form committees to study the starting and maintaining of a lawn in the different geographical areas. Find out what affect the temperature and water supply have upon the method used to do this. Report to the class.

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

12. Collect and label types of soil. Do some experimenting to show which type of soil soaks up and retains water best. Students may

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

experiment by mixing different types of soil.

13. Direct the students to keep rainfall records, record them in table form, and discuss how these would relate to the occupation of a greenskeeper.

Knowledge and skills in subject areas are helpful in occupational competence.
Educational Awareness

14. Have the class define the following words:
- a. turf
- b. fairway
- c. greens
- d. pesticides
- e. fertilizers
- f. photosynthesis
- g. sod
- h. cultivate
- i. aeration

Make a crossword puzzle using these terms.

Knowledge and skills in subject areas are helpful in occupational competence.
Educational Awareness

15. Have students make up riddles or poems leaving out the name of the worker or the piece of equipment. Have the students guess what the riddle is about i.e., The *greenskeeper's* work is never done, before and after the golfer's fun! The greenskeeper needs to sit on the *lawnmower* seat, to keep the greens both short and neat! I have many tools, some of them are __________, __________, __________.

Occupations require the use of specific materials and equipment.
Career Information

16. Choose an area of the school grounds that has a particular growing problem and have the students analyze what it needs and make the decision as to how it could be corrected.

Setting goals can be enhanced by analyzing decision-making processes.
Decision Making

17. Have a group investigate the growing areas for sod. Using a map of the United States, pin point where sod growing areas are located.

Knowledge and skills in subject areas are helpful in occupational competence.
Educational Awareness

18. Discuss with the class ways of aerating a lawn. Talk about why a lawn needs aerating.

Occupations require the use of specific materials and equipment.
Career Information

19. Bring a lawnmower into the classroom. Then the class can study how the machine works, identify its parts, and tell how each part helps in the mowing operation.

Occupations require the use of specific materials and equipment.
Career Information

20. Let students role play a greenskeeper and a new grounds maintenance employee. Let the greenskeeper instruct the employee as to what will need to be done, how to operate equipment, what kinds of decisions he may need to make, what factors must be considered in making decisions, and how the golfers may affect his decisions and goals.

Setting goals can be enhanced by analyzing decision-making processes.
Decision Making

EVALUATION ACTIVITIES

1. Have each student list some goals that a greenskeeper might have. Beneath each goal, list some of the factors that influence the decision necessary to reach that goal.

Setting goals can be enhanced by analyzing decision-making processes.
Decision Making

2. Have the students make a checklist of the tasks a greenskeeper might have to perform and write a critique of his interests and abilities which would help him in performing these duties.

Completion of a worthwhile task has value for the worker and for society.
Attitudes and Appreciations

3. Direct the class to identify some of the materials, equipment, and tools a greenskeeper would require to carry out his duties.

Occupations require the use of specific materials and equipment.
Career Information

4. Have all of the students work together to make a list of the knowledge and skills required to be competent in the occupation of a greenskeeper. Have them check those skills which they feel they have learned through their studies in school.

Knowledge and skills in subject areas are helpful in occupational competence.
Educational Awareness

5. Have the children discuss the real purpose of setting goals. Ask them to identify an educational goal they set last year. Is it still a goal for this year? Can

Setting goals can be enhanced by analyzing decision-making processes.
Decision Making

they identify decisions they made last year which helped or hindered them in attaining that goal? Did those decisions affect the attainment of this year's goal?

RESOURCES

Audio-Visuals

Lawn and Garden Insect Control. Velsicol Chemical Company, 1962. Film.

Lawn Beautiful. Modern Talking Picture Service, 1961. Film.

A Mowing Lesson For Charlie. University of Iowa, 1963. Film.

Free Materials

Educators Guide to Free Science Materials. Educators Progress Service, Incorporated, Randolph, Wisconsin, 1970.

Audio-Visuals

1. Beautiful Lawns, The Fertilizer Institute. Film.
2. Make the Best of It, Farm Film Foundation. Film.
3. Roll Out the Green Carpet (1237), Sterling Movies. Film.
4. Turf Care (S942), Associated Film, Incorporated. Film.

Organizations

American Society of Golf Course Architects, 221, North LaSalle Street, Chicago, Illinois 60601.

Golf Course Superintendents Association of America, 3158 Des Plains Avenue, Des Plains, Illinois 60018.

National Golf Foundation, 707 Merchandise Mart, Chicago, Illinois.

U. S. Golf Foundation, 40 East 38th Street, New York, New York 10016.

Major Career Development Dimension
COPING BEHAVIOR

Occupational Study
FEED SALES PERSONNEL

Many children of the intermediate level take the responsibility of feeding and caring for a pet, be it a dog, cat, horse, guinea pig, or fish. Some of these children have joined 4-H and are raising a pet for a project. Their involvement in the feeding of animals may lead to an interest in feed and the sales personnel who sell it. The feed sales personnel's job includes the giving of instructions to others, which they must be able to do well if they are to be successful. Because children in the intermediate grades are concerned daily with instructions, they may profit from a study dealing with effective interpersonal-relations skills used in giving and evaluating instructions.

BEFORE YOU BEGIN

The occupational area considered in this study is that of AGRICULTURAL SUPPLIES AND SERVICES. The occupations in this area are concerned with providing consumable supplies such as feeds, fertilizers, chemicals, and seeds, which are used in the production phase of agriculture.

This unit deals with feed, which is one aspect of the area of AGRICULTURAL SUPPLIES AND SERVICES. It will consider the preparation of grain to be sold and the selling process while developing an awareness of FEED SALES PERSONNEL.

The developmental CAREER DEVELOPMENT DIMENSION for this particular study is that of COPING BEHAVIOR. The concept *there are effective interpersonal-relations skills for giving or evaluating instructions* is especially appropriate to this occupation because feed sales personnel must give instructions of various kinds to dealers, feed store employees, and/or farmers.

The other concepts in this study are of an interacting nature. The student should begin to understand that *occupations require special personal characteristics*, that *knowledge and skills in the subject areas are helpful in occupational competence*, and that *a great many tasks can be performed by men or women.*

Subject matter which is fused in the activities is listed so that the teacher might identify some of the educational knowledge and skills necessary to research and/or perform a particular occupational task during this study and/or on the job. The subject matter used is at or below the grade for which the module is written.

The occupational information given is intended to give the teacher a brief overview of some of the tasks and requirements of a person in this particular occupation. At the end of each module, a list of resources is given for additional information.

Pupil performance objectives are written for each of the career development concepts. For the acquisition of those objectives, subject matter and occupational information relevant to the level of the child's development are used. The objectives contain only a statement of terminal behavior.

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. The teacher may wish to use some of the activities for the whole class, and others may be delegated to small groups or individuals. These activities form a nucleus around which interest can be stirred for the child and around which the teacher will want to develop additional activities.

The evaluation activities suggest various ways to evaluate the child's level of conceptualization of the career development concepts as they are

stated in the pupil performance objectives. Because the classroom teacher is the best qualified evaluator in her classroom, she should decide HOW a given knowledge or skill shall be demonstrated, and the QUALITY and QUANTITY of knowledge or skill required for a particular child or group of children. The writers of these materials have also made the assumption that the teacher will decide whether she uses all or some of the suggested activities or some activities which she adds to the unit. These factors will affect the pupil evaluations.

CAREER DEVELOPMENT CONCEPTS

COPING BEHAVIOR

Major Concept	Certain identifiable attitudes, values, and behaviors enable one to obtain, hold, and advance in a career.
Subconcept	*There are effective interpersonal-relations skills for giving or evaluating instructions.*

ATTITUDES AND APPRECIATIONS

Major Concept	Society is dependent upon the productive work of individuals.
Subconcept	*A great many tasks can be performed by men or women.*

CAREER INFORMATION

Major Concept	Basic career information will aid in making career-related decisions.
Subconcept	*Occupations require special personal characteristics*

EDUCATIONAL AWARENESS

Major Concept	Educational skills and experiences are related to the achievement of career goals.
Subconcept	*Knowledge and skills in subject areas are helpful in occupational competence.*

INFUSED SUBJECT MATTER

Mathematics

1. Graphs
2. Percentages
3. Commissions
4. Calculating cost
   - Use of adding machine
   - Use of cash register
   - Estimating mileage
5. Tabulating expense accounts

Language Arts
  1. Brainstorming
  2. Research
  3. Vocabulary study
  4. Telephone orders
  5. Debate
  6. Narration
  7. Creative writing
  8. Role playing

Science
  1. Animal nutrition
  2. Formulation of feeds

Social Studies
  1. Geography
  2. Maps
  3. Voting

OCCUPATIONAL INFORMATION

Agricultural Supplies and Services

This occupational area is concerned with the production, processing, distribution, and use of consumable supplies by the agricultural producer in the production of animals, plants, and their products. This area also includes services such as research, instruction, and application of materials as needed in the use of those supplies.

Sample Occupation: Feed Sales Personnel

. . . assist the farmer in planning his feeding program and trouble-shoot feeding problems.
. . . recognize abnormal and detrimental practices and animal health conditions.
. . . sell directly to customers across the counter.
. . . set up window displays and advertising posters.
. . . display merchandise using samples or catalogs.
. . . demonstrate articles emphasizing salable features.
. . . estimate or quote prices, credit terms, and trade-in allowances.
. . . prepare forms and sales contracts.
. . . prepare reports of business transactions and keep expense accounts.
. . . collect payment for products sold.
. . . assist local dealers in promoting use of specific feeds.
. . . sell directly to the farmer.
. . . solicit local dealers to sell their company's product.
. . . assist local dealers in promotional campaigns and feed and grain clinics for livestock dealers.
. . . find some college, farm experience, and on-the-job training beneficial.

PUPIL PERFORMANCE OBJECTIVES

COPING BEHAVIOR

. . . list the major duties performed by feed sales personnel, marking those duties which involve the giving of either written or oral instructions.

ATTITUDES AND APPRECIATIONS

. . . list some of the many sales jobs which are open to both men and women.

CAREER INFORMATION

. . . list the characteristics of a successful salesman or saleswoman, and evaluate in writing the individual's aptitude for becoming a salesperson.

. . . demonstrate the individual's ability to talk with a customer over the phone or in person by role playing a feed salesperson.

EDUCATIONAL AWARENESS

. . . make a list of the math, language arts, science, and social studies skills and knowledge which feed sales personnel use in their job.

INSTRUCTIONAL ACTIVITIES

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. Use discretion as to which activities to use for the whole class and which can be delegated to small groups or individuals to be shared with the class at a later time. Develop additional activities which can add to the child's understanding of this unit.

ACTIVITIES to develop the CAREER DEVELOPMENT CONCEPTS

1. Consider with the class the ways of buying feed. Search the yellow pages of the telephone book for places to buy feed. Discuss the two types of feed sales personnel, the ones who work in a feed store and the ones who work with the feed company and deal directly with the farmer or feed dealer. Do some research and reporting on both types of feed sales personnel showing how they differ. Are both types involved in giving and evaluating instructions?

There are effective interpersonal-relations skills for giving or evaluating instructions.

Coping Behavior

2. Brainstorm all the types of items, large or small, which sales personnel might sell. Have the students check all the ones they have seen a woman sell. Compare answers, and have them circle the ones they think they would enjoy selling.

A great many tasks can be performed by men or women.
Attitudes and Appreciations

3. Ask the students if any of their parents are salesmen or saleswomen. Let each prepare a report about what his mother or father sells, where they work, their hours, their clothing, and where they learned about their product (conventions). Then have the students make a list of the jobs which they think the feed sales personnel perform. Talk about the aptitudes and training which they feel sales personnel need.

A great many tasks can be performed by men or women.
Attitudes and Appreciations
Occupations require special personal characteristics.
Career Information

4. Interview feed sales personnel, being sure to get information about their duties, aptitudes, training, what they sell, and where they learned about each product (conventions). Compare this information with the lists the students made in activity 3.

Occupations require special personal characteristics.
Career Information

5. Let the students choose a city they would like to go to for a convention. Have them make an expense account for the trip including costs for transportation, lodging, food, and registration charges for a two-day convention.

Knowledge and skills in subject areas are helpful in occupational competence.
Educational Awareness

6. Visit a farm at a time when farm animals are feeding. Observe types of feeds used and any other supplies which are purchased from feed sales personnel. Ask the farmer to help select an animal for a cost study. Find out what it eats, how much feed it eats per day, and what other supplies are needed for its care and growth. Record the information. Follow with a visit to a feed store to observe all aspects of the salesperson's job but

Knowledge and skills in subject areas are helpful in occupational competence.
Educational Awareness

especially noting the various feeds and supplies, the prices of different brands, and reasons for varying prices. Record the prices of the feed and supplies needed to care for the animal selected for the cost study. Figure the approximate cost of caring for this animal for one month.

7. Divide into small groups and let each group choose a farm animal to research. Write reports which explain what the animal eats, how often it eats, and why certain grains and feed are better for it. Does this animal need a mixed feed? Why or why not? Pictures of the animals along with the reports may be shared with other groups through a bulletin board display.

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

8. Do some research on plants grown for feed. Make a geographical map locating the areas where each is grown. Make a graph showing the percentage of each grain used for feed.

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

9. Let the students choose a type of feed and make a mural showing the steps from the planting of the grain to the feeding of the animals. Some may show a farmer raising his own grain and feeding it directly to his animals. Others may show the steps involved in processing feed.

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

10. Research various animal diseases and the insects and parasites which bother animals. Would a feed salesperson need to be familiar with any of these? Does proper nutrition help combat any of these?

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

11. Have the students set up Fred's Feed Store. Let them plan the feeds and supplies to be sold, displays needed, and advertising techniques. Using a toy cash register and/or an adding machine, complete some transactions, filling

There are effective interpersonal-relations skills for giving or evaluating instructions.

Coping Behavior

out sales tickets and closing sales. Role play customers with different problems and personalities, and show how sales personnel often handle such situations and what instructions are given to customers with problems. Let the students decide if some methods are more successful than others.

12. Have the students write a dialogue between a customer and a salesperson on the way a salesperson might handle one of the following problems with a customer: lack of desire to change to a new kind of feed, unwillingness to spend more money for the product, erroneous ideas about products, and inability to understand instructions.

There are effective interpersonal-relations skills for giving or evaluating instructions.
Coping Behavior

13. Discuss with the class the meaning of "commission" and how some salespersonnel receive a salary on this basis. Have students make out order blanks for some feed supplies they wish to buy. Have the salesperson total the cost of these supplies and figure the commission based on a certain percentage.

Knowledge and skills in subject areas are helpful in occupational competence.
Educational Awareness

14. Have students bring different types and brands of feed to school (dog or cat food will do). Let them choose one of the products and work up a sales pitch about it. Let each demonstrate his or her sales pitch by trying to sell the product to a classmate or the entire class. Let the students discuss the strong points and weaknesses of each sales pitch and make recommendations for improvement. Let the students vote by secret ballot for the "Feed Salesman of the Year Award" and the "Feed Saleswoman of the Year Award."

Occupations require special personal characteristics.
Career Information

A great many tasks can be performed by men or women.
Attitudes and Appreciations

15. Make a vocabulary list with definitions of terms related to the feeding of animals such as ruminant, ration, mastication, etc.

Knowledge and skills in subject areas are helpful in occupational competence.
Educational Awareness

EVALUATION ACTIVITIES

1. Select some students to be representatives of feed companies and some students to be the sales personnel. Have the representatives give instructions as to how they think their product should be sold. The sales personnel should then evaluate those instructions by role playing their selling of the product. Various reactions of the representatives should be role played to show how effective or ineffective a person can be in giving instructions.

There are effective interpersonal-relations skills for giving or evaluating instructions.

Coping Behavior

2. Ask students to evaluate themselves to see if they would make good sales personnel. Do they like to meet people? Do they like people of all nationalities? Do they enjoy talking to strangers? Do they like to own things and enjoy bargaining when they buy something? Do they like to get other people's viewpoints? Do they enjoy animals and like to make speeches?

Occupations require special personal characteristics.

Career Information

3. Have the students list the characteristics they feel contribute to a feed salesperson's success. (Mention that experts in the business area ranked attitude higher than selling skills, work habits, and knowledge.) Have them list some of the skills helpful in a career as a salesperson.

Knowledge and skills in subject areas are helpful in occupational competence.

Educational Awareness

4. Have the students write a short paragraph about whether or not they would like to be a feed salesperson.

A great many tasks can be performed by men or women.

Attitudes and Appreciations

RESOURCES

Books

Hughes, Harold D. and Henson, Edward R. *Crop Production*. The McMillan Co., N. Y., N. Y., 1967.

Morrison, Frank B. *Feeds and Feeding*. The Morrison Publishing Co., Clinton, Iowa, 1959.

Robinson, O. Preston. *Store Salesmanship*. Prentice, 1966.

Stevens, Vernon; Luce, William G. and Gill, Don R. *OSU Extension Facts* "Swine Nutrition." Oklahoma University, Stillwater, Oklahoma.

Feeding Daily Cattle. Farmer Bulletin #2153, U. S. Dept. of Agriculture, Washington, D. C.

How to Succeed in Business by Telephone. May be obtained from the office of your local Bell Telephone Company.

The Purina Salesman's Job and *Animal & Poultry Nutrition*. Ralston-Purina Co., Checkerboard Square, St. Louis, Missouri.

Salesmanship in Ag. Business. Booklet, Voactional Agriculture Service, College of Agriculture, University of Illinois, Urbana-Champaign, Urbana, Illinois 61801.

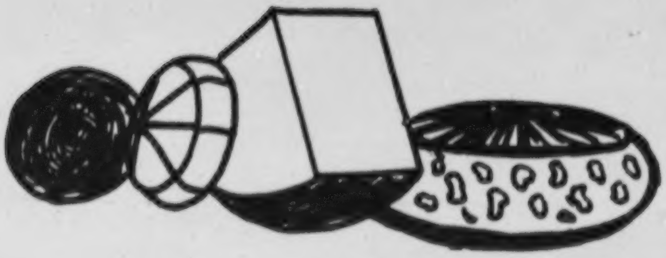
Teletraining for Business Studies : A Teacher's Guide. May be obtained from the office of your local Bell Telephone Company.

The Use of the Cash Register. Vocational Agriculture Service, College of Agriculture, University of Illinois, Urbana-Champaign, Urbana, Illinois 61801.

Organizations

American Feed Manufacturers Ass'n., 53 West Jackson Boulevard, Chicago, Illinois 60604.

DeKalb AgResearch, Inc., Sycamore Road, DeKalb, Illinois 60115.



Major Career Development Dimension
SELF-DEVELOPMENT

Occupational Study
CHEESE MAKER

What mother hasn't heard her intermediate child say, "I'm hungry! What can I eat?" A most nutritious snack is cheese. Most children are familiar with cheese and would be interested in how it is made. While learning about cheese making, children can see that, much like themselves, a cheese maker also has values and goals. Intermediate children are learning that having values and goals is an important part of life. Many times the values of their peer groups change their values and/or goals just as society's demands for certain quality, flavor, and cost of cheese change a cheese maker's goals.

BEFORE YOU BEGIN

The occupational area considered in this study is that of AGRICULTURAL PRODUCTS (FOOD PROCESSING). The occupations in this area are concerned with the processing of food products such as dairy products, meat, fruits, vegetables, and nuts.

This unit deals with dairy production, which is one aspect of AGRICULTURAL PRODUCTS (FOOD PROCESSING). It will consider the processing of the dairy products to make all types of cheese while developing an awareness of the specific occupation of CHEESE MAKER.

The developmental CAREER DEVELOPMENT DIMENSION for this particular study is that of SELF-DEVELOPMENT. The concept *an individual's values and personal goals are influenced by the values of other people* is appropriate for this study because the values that society holds concerning the quality, flavor, and cost of the cheese maker's product may influence the cheese maker's own goals and values.

The other concepts in this study are of an interacting nature. The student should begin to understand that *specialized occupations result in an interdependent society*, that *occupations require the use of specific materials and equipment*, and that *learning achievement depends upon effort and ability*.

Subject matter which is fused in the activities is listed so that the teacher might identify some of the educational knowledge and skills necessary to research and/or perform a particular occupational task during this study and/or on the job. The subject matter used is at or below the grade for which the module is written.

The occupational information given is intended to give the teacher a brief overview of some of the tasks and requirements of a person in this particular occupation. At the end of each module, a list of resources is given for additional information.

Pupil performance objectives are written for each of the career development concepts. For the acquisition of those objectives, subject matter and occupational information relevant to the level of the child's development are used. The objectives contain only a statement of terminal behavior.

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. The teacher may wish to use some of the activities for the whole class, and others may be delegated to small groups or individuals. These activities form a nucleus around which interest can be stirred for the child and around which the teacher will want to develop additional activities.

The evaluation activities suggest various ways to evaluate the child's level of conceptualization of the career development concepts as they are

stated in the pupil performance objectives. Because the classroom teacher is the best qualified evaluator in her classroom, she should decide HOW a given knowledge or skill shall be demonstrated, and the QUALITY and QUANTITY of knowledge or skill required for a particular child or group of children. The writers of these materials have also made the assumption that the teacher will decide whether she uses all or some of the suggested activities or some activities which she adds to the unit. These factors will affect the pupil evaluations.

CAREER DEVELOPMENT CONCEPTS

SELF-DEVELOPMENT

Major Concept	Social, economic, educational, and cultural forces influence self-development.
Subconcept	*An individual's values and personal goals are influenced by the values of other people.*

ATTITUDES AND APPRECIATIONS

Major Concept	Society is dependent upon the productive work of individuals.
Subconcept	*Specialized occupations result in an interdependent society.*

CAREER INFORMATION

Major Concept	Basic career information will aid in making career-related decisions.
Subconcept	*Occupations require the use of specific materials and equipment.*

EDUCATIONAL AWARENESS

Major Concept	Educational skills and experiences are related to the achievement of career goals.
Subconcept	*Learning achievement depends upon effort and ability.*

INFUSED SUBJECT MATTER

Mathematics

1. Measurement of liquid
2. Percents
3. Bar graph

Language Arts
1. Scientific and technical language
2. Comparison and contrast
3. Oral reports
4. Interviewing

Science
1. Concepts related to bacteria and molds
2. New fields of investigation to illustrate growth of scientific knowledge and opportunities for careers
3. Temperature
4. Gathering data

Social Studies
1. Individuals in groups cooperating and depending on each other
2. Conflicts among values, traditions, and institutions producing change
3. European history
4. Map drawing

OCCUPATIONAL INFORMATION

Agricultural Products (Food Processing)

The location of the bulk of the processing industry in or close to production areas highlights the fact that food processing is essentially an agricultural industry. By converting the farmer's perishable crops into more usable form, the processing industry has eliminated the waste that would otherwise result from seasonal gluts and has made these perishable crops available to the consumer year-round.

Sample Occupation: A Cheese Maker

. . . is interested in the origin of cheesemaking.
. . . knows about the process for pasteurizing milk.
. . . knows the proper time lengths and temperatures necessary for cheesemaking.
. . . knows how to use the tools which are needed to cut, mix, pile, and turn cheese curds.
. . . knows how to operate the machinery used in the cheesemaking process.
. . . knows how best to preserve and pack cheese.
. . . knows the characteristics of many varieties of cheese.
. . . is physically capable of lifting as much as one hundred pounds.
. . . is clean.
. . . wears a white uniform or a white apron and hat.
. . . is a highly trained specialist who usually has education beyond high school graduation.

PUPIL PERFORMANCE OBJECTIVES

SELF-DEVELOPMENT

. . . list some desirable values and goals of workers. Check those values and goals which are present only because of the influence of other people's values. Tell how they are influenced.

ATTITUDES AND APPRECIATIONS

. . . write several short paragraphs explaining the term "specialized occupation," the term "interdependency," and the relationship between the two.

CAREER INFORMATION

. . . make a list of special materials and equipment used in cheesemaking. Check those that are also used in jobs such as milk production which are related to cheesemaking.

EDUCATIONAL AWARENESS

. . . name some ways that one who helps make cheese can improve his production performance. Do any of these ways require special ability?

INSTRUCTIONAL ACTIVITIES

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. Use discretion as to which activities to use for the whole class and which can be delegated to small groups or individuals to be shared with the class at a later time. Develop additional activities which can add to the child's understanding of this unit.

ACTIVITIES to develop the CAREER DEVELOPMENT CONCEPTS

1. Let the students view the cheesemaking process in a film or filmstrip. Talk about the number of workers needed for the complete process and the equipment used.

Occupations require the use of specific materials and equipment.
Career Information

2. Have the students trace the origin of cheesemaking and how it has proceeded to modern times. Tell how the values, goals, efforts, and abilities of cheese makers through the ages have changed the cheesemaking process.

An individual's values and personal goals are influenced by the values of other people.
Self-Development

Learning achievement depends upon effort and ability.
Educational Awareness

3. Have the children bring in pictures of the different animals upon which cheese makers depend for milk to make cheese. Label them as to the countries where they are a source of milk for cheese. Research how the animals are cared for. Are llamas raised on dairy farms the same as dairy cattle?	*Specialized occupations result in an interdependent society.* **Attitudes and Appreciations**
4. Talk in class about milk and its transformation into cheese. How much milk does it take for one pound of cheese? What happens to the whey?	*Specialized occupations result in an interdependent society.* **Attitudes and Appreciations**
5. Let students research and report on how to vary the texture and flavor of cheese. Tell how society affects a cheese maker's goals in relation to flavor and texture of cheeses.	*An individual's values and personal goals are influenced by the values of other people.* **Self-Development**
6. Have students research the ripening or aging process for cheese. List the special materials, equipment, and conditions necessary for the process. Make a bar graph showing the names of different varieties of cheeses and the ripening period for each.	*Occupations require the use of specific materials and equipment.* **Career Information**
7. Make a comparison of the unripened cheeses (cottage cheese, neufchatel, and cream). Let students have an opportunity to taste each kind. Talk about the difference between ripened and unripened cheese. Make some cottage cheese in the classroom by souring milk, heating curds to expel whey, draining whey, salting, and adding cream.	*Occupations require the use of specific materials and equipment.* **Career Information**
8. Have students interview someone who has helped in making cheese. Find out what personal qualities a cheese maker needs to achieve the goal of making a high quality cheese which is enjoyed by many people.	*Learning achievement depends upon effort and ability.* **Educational Awareness**
9. Study European cheesemaking with the class. Draw a map of Western Europe labeling the locations	*Specialized occupations result in an interdependent society.* **Attitudes and Appreciations**

of the important cheese of that area. A study of U. S. cheesemaking could also be done. Discuss likenesses of the process in the two countries. Talk about the importing and exporting of cheese from both nations and relate it to interdependencies of societies.

10. Divide students into committees to research different kinds of cheeses. Have them note characteristics of each kind and what makes each variety different from the others. Consider how the cheese maker's ability and effort may affect the final product.

Learning achievement depends upon effort and ability.

Educational Awareness

11. Have students bring in pictures or draw pictures of different varieties of cheese to show the assortment of shapes, sizes, and colors. Make a display. Find out why varieties have different shapes, sizes, and colors and what special materials and equipment are used to make the difference.

Occupations require the use of specific materials and equipment.

Career Information

12. Have a group research the art of tasting, cheese tasting in particular. Have them develop a list of procedures to follow in order to have a successful cheese tasting activity, including the following: assemble groups of the same kinds of cheeses, plan for two separate tastings of the same cheese, clear the palate between tasting, avoid distraction of the taste by other foods and beverages, sample small amounts deliberately and slowly, have cheese at room temperature three hours before tasting, etc. Distribute a copy of the list to each class member. Bring every available variety of cheese to the classroom for a tasting party. Using their lists, give each student an opportunity to taste each variety. Gather data about which cheeses were most and least preferred by the students. Record the data in graph form. Discuss how the preferences of the students influence the goals and/or values of cheese makers.

An individual's values and personal goals are influenced by the values of other people.

Self-Development

13. Obtain a recipe for homemade cheese. Some possible sources are American Type Cheese, How to Make It for Home Use, U. S. Dept. of Agriculture pamphlet (1.9:2075, distributed by the G.P.O.); Soft Cheese Advisory Leaflet 458 and Cream Cheese Advisory Leaflet 220, Ministry of Agriculture, Fisheries, and Food, published by Her Majesty's Stationery Office; and Homemade Cheeses, published by Hulton Press, London. Talk about cheese recipes around the world and why some are guarded secrets. Let students make cheese (preferably a soft paste cheese) in the classroom, using kitchen equipment plus a dairy thermometer and some cheesecloth. Rennet and lactic starters can be purchased from drugstores. Let students compare the equipment which they used with that used in industrial cheesemaking.

Occupations require the use of specific materials and equipment.
Career Information

14. Form a committee to find out the government's role in establishing definitions and standards of identity for varieties of cheese. Talk about government standards and their relationship to a cheese maker's values and goals.

An individual's values and personal goals are influenced by the values of other people.
Self-Development

15. Have students make a mural of the entire cheesemaking process as done in our modern dairy processing plants. Some students might like to make a mural of the process as done in Europe at an earlier time.

Occupations require the use of specific materials and equipment.
Career Information

EVALUATION ACTIVITIES

1. Have the students state the goals and values which they would have if they were cheese makers. Have them tell how these goals and values would affect society. Have them explain how the values of others would influence those values and goals.

An individual's values and personal goals are influenced by the values of other people.
Self-Development

2. Have students write a story about the importance of the cheese maker to our society.

Specialized occupations result in an interdependent society.
Attitudes and Appreciations

3. Have students list the specific materials and equipment used in modern cheesemaking.

Occupations require the use of specific materials and equipment
Career Information

4. Have the students briefly outline the steps in the cheesemaking process. Have them check those operations that would take special ability. Also, have them check those operations which could be more efficient when effort is applied by the worker.

Learning achievement depends upon effort and ability.
Educational Awareness

RESOURCES

Books

Axler, Bruce H. The Cheese Hand Book. Hastings House, Publishers, 1968.
Brown, Bob. The Complete Book of Cheese. Random House, N. Y., N. Y., 1955.
Marquis, Vivienne and Patricia Haskell. The Cheese Book. Simon & Schuster, 1965.
Sammis, J. L. Cheese Making. Cheese Maker Book Co., Madison, Wisconsin, 1937.
Scheib, Ida. The First Book of Food. F. Watts, New York, N. Y., 1956.
Wason, Betty. A Salute to Cheese. Hawthorn, 1966.
Cheese and Cheese Products. U.S.D.H.E.W. Food & Drug Administration, Superintendent of Government Documents, reprinted 1959.
Childcraft. Volume 7, pp. 40-41.

Audio-Visuals

Milk and Milk Foods. David C. Cook, Texas Educational Aids. Color film.
Our Changing Way of Life -- The Dairy Farmer. Encyclopedia Britannica Educational Films, Incorporated, 1965. Film.

Free Materials

Educators Guide to Free Social Studies Materials. Educators Progress Service, Incorporated, Randolph, Wisconsin, 1970.
Printed Materials
1. Five Booklets on Health Heroes (Louis Pasteur), Florida State Department of Commerce

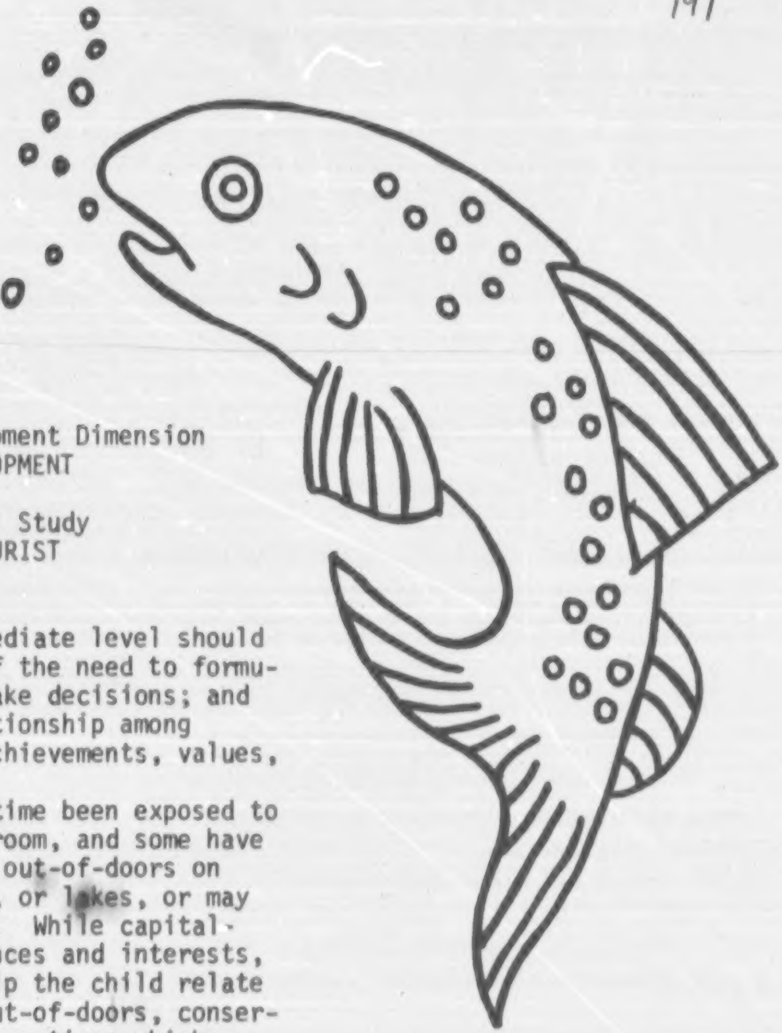
Elementary Teachers Guide to Free Curriculum Materials. Educators Progress Service, Incorporated, Randolph, Wisconsin, 1970.
Printed Materials
1. Roquefort Chefmanship Recipes, Roquefort Association, Inc.
2. Step by Step through Treasure Cave, Treasure Case.

Pictures of . . . Cheese Making. Canada Department of Agriculture, Head Distribution Unit, Information Division, Room 139 Sir John Carling Building, Central Experimental Farm, Ottawa, Ontario, Canada.

Organizations

American Dairy Association, 505 North Scott, Joliet, Illinois.
National Dairy Council, Chicago, Illinois. Packet: Animals That Give People Milk, McCabe and Mitchell.
State Extension Service, State Capitol.
St. Louis Dairy Council, Vandalia, Illinois.
U. S. Department of Agriculture, Office of Information, Publications Division, Washington, D. C. 20250.
Wisconsin Cheese Foundation, 115 West Main, Madison, Wisconsin.

Cheese Making Kits are available from various companies such as Sears Roebuck & Company, Chicago, Illinois.



Major Career Development Dimension
SELF-DEVELOPMENT

Occupational Study
FISH CULTURIST

Children at the intermediate level should develop an awareness of the need to formulate preferences; to make decisions; and to understand the relationship among interest, aptitudes, achievements, values, and occupations.

Children have by this time been exposed to aquariums in the classroom, and some have had experiences in the out-of-doors on rivers, streams, ponds, or lakes, or may have done some fishing. While capitalizing on these experiences and interests, these materials can help the child relate his interests in the out-of-doors, conservation, and fish to occupations which provide fish for sport or food production.

BEFORE YOU BEGIN

The occupational area considered in this study is that of the RENEWABLE NATURAL RESOURCES. The occupations in this area are involved in the conservation and management of forests, soil, wildlife, water, fish, range, and recreational development and maintenance.

This unit deals with fish, which is one aspect of the area of RENEWABLE NATURAL RESOURCES. It considers the breeding and stocking of fish; regulating fish population in lakes, rivers and ponds; and controlling fish diseases while developing an awareness of the specific occupation of the FISH CULTURIST.

The developmental CAREER DEVELOPMENT DIMENSION for this particular study is that of SELF-DEVELOPMENT. The concept that *there are relationships among interests, aptitudes, achievements, values, and occupations* appears to be well-suited to the study of the fish culturist. Required in this occupation are an interest in fish, a concern for conservation, and a desire to make a contribution to the protection and improvement of the environment.

The other concepts in this study are of an interacting nature. The student should begin to understand that *specialized occupations result in an interdependent society*, that *occupations require the use of specific materials and equipment*, and that *knowledge and skills in subject areas are helpful in occupational competence.*

Subject matter which is fused in the activities is listed so that the teacher might identify some of the educational knowledge and skills necessary to research and/or perform a particular occupational task during this study and/or on the job. The subject matter used is at or below the grade for which the module is written.

The occupational information given is intended to give the teacher a brief overview of some of the tasks and requirements of a person in this particular occupation. At the end of each module, a list of resources is given for additional information.

Pupil performance objectives are written for each of the career development concepts. For the acquisition of those objectives, subject matter and occupational information relevant to the level of the child's development are used. The objectives contain only a statement of terminal behavior.

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. The teacher may wish to use some of the activities for the whole class, and others may be delegated to small groups or individuals. These activities form a nucleus around which interest can be stirred for the child and around which the teacher will want to develop additional activities.

The evaluation activities suggest various ways to evaluate the child's level of conceptualization of the career development concepts as they are stated in the pupil performance objectives. Because the classroom teacher is the best qualified evaluator in her classroom, she should decide HOW a given knowledge or skill shall be demonstrated, and the QUALITY and QUANTITY of knowledge or skill required for a particular child or group of children. The writers of these materials have also made the assumption that the teacher will decide whether she uses all or some of the suggested activities or some activities which she adds to the unit. These factors will affect the pupil evaluations.

CAREER DEVELOPMENT CONCEPTS

SELF-DEVELOPMENT

Major Concept	Individuals differ in their interests, aptitudes, values, and achievements.
Subconcept	*There are relationships among interests, aptitudes, achievements, values, and occupations.*

ATTITUDES AND APPRECIATIONS

Major Concept	Society is dependent upon the productive work of individuals.
Subconcept	*Specialized occupations result in an interdependent society.*

CAREER INFORMATION

Major Concept	Basic career information will aid in making career-related decisions.
Subconcept	*Occupations require the use of specific materials and equipment.*

EDUCATIONAL AWARENESS

Major Concept	Educational skills and experiences are related to the achievement of career goals.
Subconcept	*Knowledge and skills in subject areas are helpful in occupational competence.*

INFUSED SUBJECT MATTER

Mathematics

1. Collection of data
2. Bar and line graphs

Language Arts
1. Scientific and technical language
2. Before and after descriptions
3. Taking notes
4. Interviewing
5. Report writing from research
6. Story writing
7. Letter writing

Science
1. Dissection techniques
2. Effects of environment on fish population -- food chains
3. Interpretation of data
4. Classification of fish, shellfish, aquatic vegetation

Social Studies: Community's role in conservation

OCCUPATIONAL INFORMATION

Renewable Natural Resources

Agricultural resources which are capable of reproducing or replenishing themselves are known as renewable natural resources. The occupations in this study are involved in the conservation and management of these resources for the economic and recreational benefit of mankind.

Sample Occupation: A Fish Culturist

. . . is concerned with conservation.
. . . helps protect and improve the habitat of wildlife.
. . . collects samples of water, fish, soil, etc.
. . . performs routine field and laboratory tests.
. . . works with various types of water life.
. . . performs light physical labor.
. . . makes studies of biological problems.
. . . establishes and maintains a continuing surveillance program.
. . . compiles and evaluates data.
. . . interprets analytical findings.
. . . prepares reports.
. . . prepares and maintains records.
. . . completes forms, applications, and reports to officials and and the public.
. . . plans and executes programs and projects.
. . . supervises training of assistants and technicians.
. . . has training in a technical school.

PUPIL PERFORMANCE OBJECTIVES

SELF-DEVELOPMENT

. . . list the individual's aptitudes and interests that could be useful in a career as fish culturist.

ATTITUDES AND APPRECIATIONS

. . . list some reasons why the occupation of a fish culturist is important to society.

CAREER INFORMATION

. . . describe some of the specific materials and equipment used by the fish culturist.

EDUCATIONAL AWARENESS

. . . identify some of the knowledge and skills needed if one wishes to become a fish culturist.

INSTRUCTIONAL ACTIVITIES

The instructional activities have been designed to develop the CAREER DEVELOPMENT CONCEPTS using a variety of subject matter, knowledge and skills, and appropriate occupational information. Use discretion as to which activities to use for the whole class and which can be delegated to small groups or individuals to be shared with the class at a later time. Develop additional activities which can add to the child's understanding of this unit.

ACTIVITIES to develop the CAREER DEVELOPMENT CONCEPTS

1. Ask students to interview someone who works closely with aquatic wildlife. Ask him to tell about what activities he performs on his job and what tasks he particularly enjoys.	*There are relationships among interests, aptitudes, achievements, values, and occupations.* **Self-Development**
2. Make a class study of aquatic life, especially that found in the locality. a. Make a study of fish. Find out their names, habits, and diseases. Identify any other problems to the fish population and outline some solutions. b. Make a study of aquatic weeds and other aquatic vegetation. Identify three types of water plants, the adaptation of roots and leaves, and the reproduction and seed dispersal. Identify any uses of aquatic plants and also problems caused by them.	*Knowledge and skills in subject areas are helpful in occupational competence.* **Educational Awareness**

3. Take a field trip to a local stream or pond. Make individual collections of pond life. Have the students note the present conditions of the pond such as the amount and clearness of the water, amount of algae and any other pollutants.

Knowledge and skills in subject areas are helpful in occupational competence.
Educational Awareness
Occupations require the use of specific materials and equipment.
Career Information

4. Have the students write stories about a world without fish. As a class, develop a list of ways that all types of fish are used. Talk about the role of a fish culturist in making it possible for us to have fish.

Specialized occupations result in an interdependent society.
Attitudes and Appreciations

5. Set up with the class some experiments with aquariums to vary the temperature, light, oxygen, amounts or numbers of fish, amounts of water, cleanliness of water, etc. Take notes and record all data; make tables, graphs, and charts; and draw conclusions.

Occupations require the use of specific materials and equipment.
Career Information
Knowledge and skills in subject areas are helpful in occupational competence.
Educational Awareness

6. Draw a food chain showing the place that fish have in it. Explain the role of the community in keeping the fish healthy and productive.

Specialized occupations result in an interdependent society.
Attitudes and Appreciations

7. Have the students research the effect of various pollutants on fish, and their subsequent affect on man.

Knowledge and skills in subject areas are helpful in occupational competence.
Educational Awareness

8. Obtain a book about fish and/or have a student write a letter to the state fish and game commission requesting literature. Using the material for reference, ask some children who are especially interested in fish to make a chart listing the various fish families living in the state and some of the names of the fish included in each family. Indicate which are salt water and which are fresh water fish.

There are relationships among interests, aptitudes, achievements, values, and occupations.
Self-Development

9. Have the students form groups to study a type of shellfish. Books about shells provide information. Ask the students to write

Knowledge and skills in subject areas are helpful in occupational competence.
Educational Awareness

short summaries about the habits and uses of each and the factors which endanger their existence. Display the summaries on the bulletin board along with pictures or illustrations of the shellfish studied.

10. Have students study a diagram of the parts of a fish. Let them then dissect a native fish and examine its external and internal parts. Identify the types of dissecting equipment and the use of each.

Occupations require the use of specific materials and equipment.
Career Information

11. Have a student write to the state conservation department asking for a copy of the fish and game laws for the state. When materials arrive, let the students read the ones pertaining to fishing. Discuss the need for fish and game laws and give the students an opportunity to tell why they feel each law is or is not good. Would a fish culturist have an interest in regulations on fishing? Why?

There are relationships among interests, aptitudes, achievements, values, and occupations.
Self-Development

12. Have the students research work done at fish hatcheries and commercial fish farms. Note differences in conditions needed for salt water and fresh water fish. Observe any unique materials and equipment needed.

Occupations require the use of specific materials and equipment.
Career Information

13. Have a student investigate a tropical fish farm and prepare a presentation of information for the class.

Specialized occupations result in an interdependent society.
Attitudes and Appreciations

14. Ask someone who is proficient in operating a motorboat to give a demonstration of how to operate the motor. If possible, let them view a demonstration of a motorboat in water. Relate the activity to the job of the fish culturist.

Occupations require the use of specific materials and equipment.
Career Information

15. Have a brainstorming session asking the students to name all occupations which deal with aquatic life and its preservation.

Specialized occupations result in an interdependent society.
Attitudes and Appreciations

For descriptions of each, use the Dictionary of Occupational Titles. Consider each worker's place in the interdependent society.

16. Have some students prepare a display of pictures of fish bred for sport, commercial fishing, or aquariums.

There are relationships among interests, aptitudes, achievements, values, and occupations.
Self-Development

EVALUATION ACTIVITIES

1. Ask each student to write a critique of the activities provided, emphasizing those activities which he liked and would like to contin[illegible] and those which he did not like.

There are relationships among interests, aptitudes, achievements, values, and occupations.
Self-Development

2. Have the class make a checklist of interests which a fish culturist might have which would lead him into this type of occupation. Have the students identify their own interests. At the same time, have them identify those areas which they would have to develop if they were to go into this area.

There are relationships among interests, aptitudes, achievements, values, and occupations.
Self-Development

3. Ask the students to identify ways that the individual student is dependent on people who help in producing quality fish.

Specialized occupations result in an interdependent society.
Attitudes and Appreciations

4. Direct the group in identifying materials, equipment, skills, and knowledge needed by a fish culturist.

Occupations require the use of specific materials and equipment.
Career Information

Knowledge and skills in subject areas are helpful in occupational competence.
Educational Awareness

RESOURCES

Books

Bennett, George. Management of Lakes and Ponds. Reinholdt Publishing Corporation, New York, N. Y., 1971.

Braker, William. Exploring and Understanding Fish. Benefic Press, 1971.

Broekel, Ray. The True Book of Tropical Fish. Children's Press, Chicago, Illinois, 1956.

Colby, C. B. Fish and Wildlife. Cowar[illegible], New York, N. Y., 1955.

Cooper, Elizabeth K. Science on the Sh[illegible]ks. Harcourt, 1960. 187 pp. illus. (5-7).

Crosby, Alexander L. Junior Science Book of Pond Life. Garrard, 1964. 64 pp. illus. (1-3).

Curtis, Brian. The Life Story of the Fish. Dover Publications, Inc., New York, N. Y., 1961.

Davis, H. S. Culture and Diseases of Game Fishes. University of California Press, Berkeley, California, 1953.

Eddy, Samuel. How to Know Fresh Water Fishes. Wm. C. Brown Company, Dubuque, Iowa, 1957.

Grosvenor, Melville B. Wondrous World of Fishes. National Geographic Society, Washington, D. C., 1965.

Lamonte, Francesca. North American Game Fishes. Dubleday, Doran and Company, New York, N. Y., 1946.

Lee, Jasper S. Catfish Farming. Mississippi State University State College, Mississippi 39762, 1971.

Mackenthun, Kenneth M. and William Marcus. Biological Associated Problems in Freshwater Environments -- Their Identification and Control. U. S. Department of the Interior, Washington, D. C., 1968.

Mohr, Eugene V. The Study of Fishes Made Simple. Doubleday and Company, Inc., Garden City, New York, 1962.

Place, Marian T. Let's Go to a Fish Hatchery. Putnam, 1966. illus.

Podendorf, Illa. The True Book of Animals of the Sea and Shore. Children's Press, Chicago, Illinois, 1956.

Riedman, Sarah Regal. Let's Take a Trip to a Fishery. Abelard Schuman Limited, New York, N. Y., 1956.

Selsam, Millicent. Underwater Zoos. Morrow, 1961. 96 p. illus. (4-6).

Surber, Eugene W. Improving Sport Fishing by Control of Aquatic Weeds. Circular 128, U. S. Department of Interior, Washington, D. C., 1961.

VanGytenbeek, R. P. The Way of a Trout. Lippincott, 1972. illus. (7-9).

Wolfe, Louis. Aquaculture: Farming in Water. Putnam, 1972. (7-9).

Zim, Herbert. Goldfish. William Morrow and Company, New York, N. Y., 1947.

Aquatic Weeds - Their Identification and Methods of Control. A. C. Lopinot, Department of Conservation, Springfield, Illinois 62706.

The Picture Book of Fisheries. The John Day Co., New York, N. Y., 1961.

Report to the Fish Farmer. U. S. Department of the Interior, Bureau of Sport Fisheries and Wildlife, Washington, D. C. 20402, February, 1970.

Audio-Visuals

Aquarium - Classroom Science. Norman Bean, 1967. Film.

An Aquarium. University of Minnesota, 1962. Film.

Aquatic Insects. Coronet Films, 1968. Film.

Environment and Survival - Life in a Trout Stream. Film Association of California, 1962. Film.

Fishes. McGraw-Hill Text Films, 1967. Film.

Fish and Their Characteristics. Coronet Films, 1961. Film.

Fish in a Changing Environment. Encyclopedia Britannica Educational Corporation, 1966. Film.

Fish in the Sea. California Department of Fish and Game. Film.

Life Story of the Crayfish. Encyclopedia Britannica Educational Corporation, 1963. Film.

New England Fishermen. Encyclopedia Britannica Educational Films, Inc., 1973. Film.

Story of a Goldfish. Fleetwood Films, Inc., 1964. Film.

Story of a Trout Hatchery. Sleeping Giant Films, Inc., 1960. Film.

The Story of a Trout. Fleetwood Films, Inc., 1965. Film.

Time of Migration. Brandon Films, 1962. Film.

Free Materials

Educators Guide to Free Science Materials. Educators Progress Service, Incorporated, Randolph, Wisconsin, 1970.

Printed Materials

1. Conserving Our Wildlife F-30, Standard Oil Company of California.
2. Construction and Management of Farm Ponds, Kansas Forestry, Fish and Game Commission.
3. Fishery Leaflets, U..S. Department of the Interior, Fish and Wildlife Service.
4. Our Finny Friends, Wyoming Game and Fish Commission.
5. Sponge -- Treasure From the Sea, Fish and Wildlife Service, Bureau of Commercial Fisheries, U. S. Department of the Interior.
6. Wildlife of Lakes, Streams, and Marshes, National Wildlife Federation.

Audio-Visuals

1. Estuarine Heritage, Fish and Wildlife Service, Bureau of Commerical Fisheries, U. S. Department of the Interior. Film.
2. Fishing Five Great Lakes, Fish and Wildlife Service, Bureau of Commercial Fisheries, U. S. Department of the Interior. Film.
3. Salmon -- Catch on Can, Fish and Wildlife Service, Bureau of Commercial Fisheries, U. S. Department of the Interior. Film.
4. Survival of the Pacific Salmon, U. S. Army Engineer Division, North Pacific. Film.
5. Underwater Reflections, Wilkie Brothers Foundation. Film.

Educators Guide to Free Social Studies Materials. Educators Progress
Service, Incorporated, Randolph, Wisconsin, 1970.
Audio-Visuals
1. Harvest of the Sea, Modern Talking Picture Service. Film.
2. Hawaiian Harvest to the Sea, Travelers Companies. Film.
3. Marisa and the Mermaid, Florida Development Commission. Film.
4. Something Fishy, Florida Development Commission. Film.
5. Watermen of Chesapeake, Fish and Wildlife Service, Bureau of Commercial Fisheries, U. S. Department of the Interior.

Elementary Teachers Guide to Free Curriculum Materials. Educators
Progress Service, Incorporated, Randolph, Wisconsin, 1970.
Printed Materials
1. Exploring the Tuna Industry, Runa Research Foundation, Inc.
2. Georgia Fish and Fishing, Georgia State Game and Fish Commission.
3. Remember Folks, Outboard Boating Club of America.
4. Ricky and Debbie in Sardineland, Marine Sardine Council.
5. Safety Afloat, Mobil Oil Corporation.
6. You Can Be a Conservationist, American Forestry Association.
7. What Have I Caught?, Kansas Forestry, Fish, and Game Commission.

Organizations

American Fisheries Society, 1404 New York Avenue, N. W., Washington, D. C. 20005.

Bureau of Sport Fisheries & Wildlife, U. S. Department of the Interior, Fish and Wildlife Service, 18th and C Street, N. W., Washington, D. C. 20240.

Regional Bureaus of Sport Fisheries and Wildlife.

Sport Fishing Institute, 719 13th Street, N. W., Washington, D. C. 20005.

State Fish and Game Commissions.

State Department of Conservation, Division of Fisheries.

APPENDICES

APPENDIX A

AGRICULTURAL:

DEFINITIONS

AREAS FOR INVESTIGATION

OCCUPATIONS

I. AGRICULTURAL PRODUCTION

Agricultural production is the growing of crops or raising of livestock for the purpose of increasing the quantity of quality products and offering those crops, livestock, or products for sale. High agricultural production requires people with a high degree of knowledge and skill in the plant or animal sciences, and/or business management.

Animal Production: The principal activities deal with the quantity production of quality food and non-food needs for humans and other animals, as well as with the improvement of production practices by better breeding, feeding, and management techniques.

Areas for investigation:

1. Selecting livestock
2. Breeding livestock
3. Feeding livestock
4. Maintaining animal health
5. Marketing livestock
6. Housing livestock

Plant Production: The principal activities deal with the quantity production of quality food and non-food needs for humans and other animals, as well as with the improvement of production practices by better seed selection; fertilizing programs; and planting, cultivating, and harvesting techniques.

Areas for investigation:

1. Seed and plant selection
2. Planting farm crops
3. Plant nutrition
4. Soil tillage
5. Plant pest control
6. Harvesting farm crops
7. Marketing farm crops

Mechanics: The principal activities deal with the purchasing, operating, and maintaining of general and specialized equipment. (This area will be developed in the module entitled "Agricultural Mechanics.")

Areas for investigation:

1. Types and uses of power in agriculture
2. Operation and repair of agricultural machinery and equipment
3. Construction and maintenance of structures
4. Electrification

Agricultural Business Management: The principal activities deal with budgeting (accounting), financing, managing, marketing, purchasing, personnel management, and economics.

Areas for investigation:

1. Farm planning
2. Financial and legal protection
3. Farm personnel management

The following occupations were developed into Teaching Modules for this guide:

Truck Farmer - Primary
Livestock Producer - Intermediate

The following occupations could be developed into Teaching Modules:

1. Cattle producer
2. Sheep rancher
3. Wool buyer
4. Veterinarian
5. Swine farmer
6. Livestock marketing specialists
7. Livestock buyer
8. Farm adviser
9. Animal groomer
10. Animal geneticist
11. Kennel operator
12. Poultry farmer
13. Horse farm manager
14. Farrier
15. Horseman, show
16. Tenant farmer
17. Farm laborer
18. Sharecropper
19. Grain or forage farmer
20. Plant pathologist
21. Broker & market reporter
22. Farm appraiser
23. Plant geneticist
24. Soil scientist
25. Soil conservationist
26. Seed grower
27. Truck farmer
28. Fruit farmer
29. Orchardist
30. Agronomist
31. Rice farmer
32. Cotton farmer
33. Sugar beet farmer
34. Grain elevator manager
35. Custom farm operator
36. Fish farmer
37. Laboratory animal producer
38. Farm manager
39. Agricultural consultant (Bank)

II. AGRICULTURAL SUPPLIES AND SERVICES

This occupational area is concerned with the production, processing, distribution, and use of consumable supplies used by the agricultural producer in the production of animals, plants, and their products. This area also includes services such as research, instruction, and application of materials as needed in the use of those supplies.

Feeds: The principal activities deal with preparing, selling, and researching feeds and feedstuffs and with providing quality control.

Areas for investigation:

1. Formulating rations
2. Preparing feed
3. Feed additives
4. Utilization of nutrients by animals

Chemicals: The principal activities deal with researching, inspecting, distributing, and marketing of chemicals; with operating equipment used in application of chemicals; and with providing instruction as to their use.

Areas of investigation:

1. Chemicals and agricultural problems
2. Safe handling of chemicals
3. Laws and regulations
4. Application of chemicals
5. Research

Fertilizers: The principal activities deal with the mixing, blending, inspecting, marketing, and researching of fertilizers; making soil analyses; and applying chemical elements to the soil.

Areas for investigation:

1. Storage and handling of fertilizers
2. Soil tests to determine fertilizer and lime needs
3. Regulations and controls
4. Application of fertilizers

Seeds: The principal activities deal with cleaning, grading, inspecting, testing, researching, and marketing of seeds.

Areas for investigation:

1. Production
2. Quality control
3. Storing and handling
4. Distribution

The following occupations were developed into Teaching Modules for this guide:

Agronomist - Primary
Feed Sales Personnel - Intermediate

The following occupations could be developed into Teaching Modules:

1. Feed grinder
2. Feed mill superintendent
3. Feed sales manager
4. Feed company credit manager
5. Feed store sales personnel
6. Grain mill products inspector
7. Grain elevator operator
8. Mixer and blender operator
9. Formulation specialist
10. Fertilizer sales personnel
11. Fertilizer plant manager
12. Anhydrous ammonia inspector
13. Agricultural chemist
14. Seed cleaner operator
15. Seed sales personnel
16. Seed inspector
17. Geneticist
18. Seed analyst
19. Agricultural chemical equipment manager
20. Aerial spray operator
21. Agricultural chemical sales personnel
22. Agricultural chemical inspector
23. Weed abatement foreman
24. Agricultural extension specialist
25. Plant pathologist
26. Agricultural supply store manager
27. Custom applicator (chemicals, fertilizers, etc.)
28. Feed mill worker
29. Veterinarian
30. Agricultural teacher
31. County extension agent

III. AGRICULTURAL EQUIPMENT AND MECHANICS

Agricultural equipment and mechanics is the developing of new and improved agricultural equipment and structures, their operation and maintenance; the solving of soil and water problems; the designing and supervising of irrigation systems; and the designing and using of various power systems.

Power, Machinery, and Tools: The principal activities in this area deal with the gaining and using of knowledge and skills for the purchase, operation, and maintenance of agricultural equipment; selling, servicing, and repairing of agricultural equipment and parts; and the development or improvement of agricultural equipment.

Areas for investigation:

1. Engines
2. Design, assembly, adjustment, and/or repair of agricultural equipment

Agricultural Structures: The principal activities in this area deal with the design, construction, and maintenance of agricultural structures.

Areas for investigation:

1. Determination of structure requirements
2. Design
3. Construction
4. Installation of water, ventilation, and protection systems
5. Maintenance

Soil and Water Management: The principal activities in this area deal with designing and constructing water and soil management structures.

Areas for investigation:

1. Surveying
2. Erosion
3. Drainage
4. Farm ponds
5. Irrigation systems

Electrification: The principal activities in this area deal with the gaining of knowledge of the principles of electricity and applying those principles as related to the design, operation, and maintenance of agricultural structures and equipment.

Areas for investigation:

1. Selecting electrical systems
2. Installing and servicing electrical systems
3. Servicing and repairing electrical motors

The following occupations were developed into Teaching Modules for this guide:

Farm Equipment Mechanic - Primary
Irrigation Engineer - Intermediate

The following occupations could be developed into Teaching Modules:

1. Agricultural equipment dealer
2. Agricultural equipment sales manager
3. Agricultural equipment sales personnel
4. Agricultural parts sales personnel
5. Agricultural engineer
6. Agricultural equipment service representative
7. Agricultural equipment mechanic
8. Agricultural equipment inspector and tester
9. Agricultural equipment systems specialist
10. Agricultural equipment operator
11. Agricultural building specialist
12. Agricultural building components sales personnel
13. Agricultural building ventilation and insulation technician
14. Irrigation engineer
15. Soil scientist
16. Irrigation district manager
17. Soil biologist
18. Soil testing technician
19. Soil conservationist
20. Surveyor
21. Agricultural engineer
22. Electrician
23. Public utilities sales personnel
24. Agricultural machinery operator
25. Agricultural machinery set up man
26. Agricultural mechanics teacher

IV. AGRICULTURAL PRODUCTS (FOOD PROCESSING)

The location of the bulk of the processing industry in or close to production areas highlights the fact that food processing is essentially an agricultural industry. By converting the farmer's perishable crops into more usable form, the processing industry has eliminated the waste that would otherwise result from seasonal gluts and has made these perishable crops available to the consumer year-round.

Dairy Processing: The principal activities may be divided according to three general types of dairy plants. One type deals primarily with fluid milk and some fluid milk by-products. The second type of plant makes ice cream or ice cream mix. The third type manufactures butter, cheese, nonfat dry milk, condensed milk, or other products.

Areas of investigation:

1. Receiving
2. Sanitation
3. Processing
4. Storing and shipping
5. Equipment
6. Inspection
7. Distribution

Meat Processing: The principal activities deal with slaughtering poultry, fish, and livestock; dressing, curing, processing, packaging, and canning meat; storing meat and meat products; and distributing and selling meat and meat products.

Areas of investigation:

1. Sanitation
2. Processing
3. Storing and shipping
4. Equipment
5. Identification of cuts
6. Inspection
7. Distribution

Fruits, Vegetables, and Nuts: The principal activities deal with washing the products; inspecting for foreign or damaged materials; trimming or peeling products; processing these products by canning, freezing, or drying; labeling; and distributing the product to the consumer.

Areas of investigation:

1. Sanitation
2. Inspecting
3. Sorting

4. Grading
5. Canning, freezing, or drying
6. Storing
7. Distribution

Other Products: The principal activities deal with the processing of raw materials such as cotton, tobacco, wool, furs, or grain which are then sold to manufacturers to be made into a variety of finished products.

Areas of investigation:

1. Inspecting
2. Sorting
3. Grading
4. Storing
5. Marketing

The following occupations were developed into Teaching Modules for this guide:

Peanut Butter Maker - Primary
Cheese Maker - Intermediate

The following occupations could be developed into Teaching Modules:

1. Milk sampler
2. Clarifier
3. Dairy plant engineer
4. Dairy tester
5. Butter maker
6. Ice cream maker
7. Dried, condensed and evaporated milk plant manager
8. Offal man
9. Foreman of a cured-meat packing plant
10. Meat inspector
11. Meat grader
12. Final dressing inspector
13. Animal eviscerator
14. Blancher operator
15. Batch freezer operator
16. Egg processing plant mgr.
17. Cannery worker
18. Nut roaster
19. Rice miller
20. Drier (yeast)
21. Gelatin plant foreman
22. Wheat cleaner (cereal)
23. Sugar refining foreman
24. Egg washing machine operator
25. Egg breaker
26. Egg candler
27. Grain sampler
28. Laboratory technician
29. Livestock buyer
30. Butcher
31. Poultry inspector
32. Produce buyer
33. Salesman, raw wool
34. Wool-fleece grader
35. Tobacco buyer
36. Maple sugar maker
37. Honey grader and blender
38. Smoker
39. Pickler
40. Cotton classifier
41. USDA inspector

V. ORNAMENTAL HORTICULTURE

Ornamental Horticulture deals with the culture, production, and maintenance of plants; the establishment, maintenance, and management of Ornamental Horticulture enterprises; the principles and practices involved in locating, planting, and maintaining turf, plants, and shrubs; and the selection and placement of nonliving materials for the beautification of the indoor and outdoor environment.

Arboriculture: The principal activities in this field deal with the cultivation and maintenance of trees and shrubs especially for ornamentation.

Areas for investigation:

1. Tree selection and identification
2. Propagation
3. Planting
4. Equipment
5. Diagnosis and treatment of trees
6. Tree design

Floriculture: The principal activities in this field deal with the cultivation and management of ornamental and flowering plants.

Areas for investigation:

1. Floral plant selection and identification
2. Planting media
3. Fertilizers and application
4. Plant propagation
5. Insect and disease control
6. Floral design

Green House Operation and Management: The principal activities in this field deal with the management and operation of an enclosure for the protection and cultivation of plants.

Areas for investigation:

1. Establishment and maintenance of greenhouse conditions
2. Structure design
3. Controlled growth of plants
4. Management techniques

Landscaping: The principal activity in this field deals with rearranging and modifying the effects of natural scenery over a tract of land for aesthetic effect.

Areas for investigation:

1. Design
2. Site preparation
3. Plant selection
4. Planting
5. Maintenance

Nursery Operation and Management: The principal activities in this field deal with the growing, developing, and marketing of trees, shrubs, and other ornamental plants for the beautification and improvement of our environment.

Areas for investigation:

1. Identification, selection, planting and transplanting stock
2. Soil preparation
3. Grafting and budding
4. Pruning
5. Equipment
6. Shipping

Turf Management: The principal activities in this field deal with the management and growth of grasses to be used for turf.

Areas for investigation:

1. Seed selection
2. Growing of turf
3. Transplanting of turf
4. Mowing, watering, and fertilizing turf
5. Insect, disease, and weed control
6. Recreational turf areas

The following occupations were developed into Teaching Modules for this guide:

Florist - Primary
Greenskeeper - Intermediate

The following occupations could be developed into Teaching Modules:

1. Arborist
2. Ornamental horticulturist
3. Plant breeder
4. Horticulture teacher
5. Arboretum foreman
6. Park foreman
7. Tree service department manager
8. Tree pruner
9. Tree budder

10. Tree planter
11. Tree sprayer
12. Tree remover
13. Tree climber
14. Florist
15. Flowershop manager
16. Floral designer
17. Flower grower
18. Greenhouse employee
19. Plant propagationist
20. Greenhouse manager
21. Landscape architect
22. Cemetery superintendent
23. Landscape nurseryman
24. Pest control specialist
25. Campground landscaper
26. Landscape gardener
27. Nursery manager
28. Nursery sales personnel
29. Nursery shipping clerk
30. Plant pathologist
31. Plant geneticist
32. Golf course superintendent
33. Turf production manager
34. Sod sales personnel
35. Equipment maintenance repairman
36. Sod layer

VI. RENEWABLE NATURAL RESOURCES

Agricultural resources which are capable of reproducing or replenishing themselves are known as renewable natural resources. The occupations in this study are involved in the conservation and management of these resources for the economic and recreational benefit of mankind.

Forests: The principal activities include forest maintenance, reforestation, insect and disease control, and fire prevention.

Areas for investigation:

1. Value of forest
2. Tree identification
3. Forest establishment and management
4. Disease control
5. Insect and pest control
6. Fire prevention and suppression

Soil: The principal activities include offering information and services in water control, prevention of soil erosion, soil rehabilitation, land use, and land measurement.

Areas for investigation:

1. Soil identification
2. Land use classification
3. Soil conservation practices
4. Soil mapping and surveys
5. Soil fertility management

Wildlife: The principal activities include studying and providing information on migrations, habitats, and other characteristics of wildlife; developing methods of wildlife conservation; and propagating game for economic and recreational purposes.

Areas for investigation:

1. Identification and population management
2. Propagation
3. Census and habitat evaluation

Water: The principal activities include helping urban and rural land managers control, purify, transport, and conserve their water supply.

Areas for investigation:

1. Water sources
2. Determination of water quality and its control

Fish: The principal activities include breeding and stocking fish; regulating fish population in lakes, rivers, and ponds; and controlling disease.

Areas for investigation:

1. Pond construction and development for fish production
2. Fish pond management
3. Fish hatchery techniques
4. Stocking of lakes, rivers, and ponds
5. Breeding

Range: The principal activities include developing and protecting range lands for grazing, recreation, and wildlife by preventing overgrazing, erosion, and fire; controlling disease and poisonous plants; and maintaining roads, trails, water holes, and salt stations.

Areas for investigation:

1. Range plant ecology
2. Range plant identification
3. Range condition, trend, and utilization
4. Range grazing management
5. Range renovation practices

Recreational Uses: The principal activities include planning of campsites and recreational centers; participating in enforcement of recreational rules and regulations relating to parking, campfires, use of facilities, and sanitation to insure protection of picnic sites, campgrounds, and hunting and fishing areas; breeding and raising of game; and wildlife research.

Areas for investigation:

1. Identification of recreational use
2. Establishment, operation, and administration of a recreational enterprise
3. Protective agencies
4. Recreational rules and regulations
5. Wildlife research and propagation

The following occupations were developed into Teaching Modules for this guide:

Park Ranger Naturalist - Primary
Fish Culturist - Intermediate

The following occupations could be developed into Teaching Modules:

1. Conservation aide
2. Soil conservation technician
3. Forest ecologist
4. Forest geneologist
5. Forest inspector
6. Fire lookout man
7. Forest fire fighter
8. Forest sprayer
9. Surveyor
10. Mapper
11. Game animal breeder
12. Trapper or hunter
13. Natural history curator
14. Fish biologist
15. Taxidermist
16. Refuge manager
17. Game farm manager
18. Aquaculture technician
19. Marine quality control technician
20. Estuarine researcher
21. Fish hatchery manager
22. Seine man
23. Fishing instructor
24. Live bait dealer
25. Game protector
26. Range manager
27. Range conservationist
28. Park superintendent
29. Grounds maintenance technician
30. Animal keeper
31. Wildlife biologist
32. Wildlife technician
33. Game farm worker
34. Forest ranger
35. Agronomist

VII. FORESTRY

Forestry is the young and expanding profession of scientific management of forests, forest land, and their products in order to insure continuous production of goods and services. The occupations in this study are concerned with managing and utilizing timber resources; providing facilities for recreation; looking after grazing lands; developing homes for wildlife; safeguarding water supplies; reproducing, protecting, and improving forests; and researching methods of keeping the land productive.

Production and Propagation: The principal activities include planting, transplanting, cruising, and estimating timber; felling, limbing, and bucking trees; loading, transporting, and unloading logs; and dragging or skidding logs to a central loading area.

Areas for investigation:

1. Establishing a forest crop
2. Forest care and improvements
3. Measuring standing timber
4. Harvesting
5. Equipment

Protection: The principal activities include insect, fire, disease, erosion, and flood control; combating damage done by cattle and humans; and conducting research into methods of cutting and removing timber with minimum waste and damage.

Areas for investigation:

1. Protection from animals
2. Protection from fire
3. Protection from insects
4. Protection from disease
5. Ecological timber conservation
6. Development of cutting and removal techniques

Products and By-Products: The principal activities are concerned with putting wood into a more useful and convenient form. This includes separating and staking logs; cutting them into proper lengths, widths, and thicknesses; debarking, peeling, clipping, drying, gluing, cutting into sheets, sanding, grading, stamping, packing, and transporting to supply wholesalers and distributors; and gathering and/or collecting various by-products from the trees.

Areas for investigation:

1. Grading
2. Debarking
3. Sawing
4. Stacking

5. Drying
6. Seasoning
7. Equipment
8. Collection and processing of by-products

The following occupations were developed into Teaching Modules for this guide:

Forest Technician - Primary
Christmas Tree Farmer - Intermediate

The following occupations could be developed into Teaching Modules:

1. Logger
2. Timber stand improvement foreman
3. Logging operations inspector
4. Surveyor
5. Log contractor
6. Pulp buyer
7. Heavy equipment operator
8. Timber market estimator
9. Loader operator
10. Gang sawyer
11. Chipper operator
12. Skidway man
13. Chokerman
14. Forest fire control technician
15. Forest fireman
16. Tree surgeon
17. Entomologist
18. Forest ranger
19. Mill superintendent
20. Wood marketing foreman
21. Dry kiln foreman
22. Quality controller
23. Saw mill equipment operator
24. Grader
25. Debarker
26. Wood technologist
27. Gum gatherer
28. Sugar tapper
29. Sap collector
30. Greenspicker
31. Moss cutter
32. Resin gatherer

VIII. ENVIRONMENTAL PROTECTION

Occupations in this area are involved in the protection of water, air, and soil, all of which are essential to man's survival, and the elimination or control of man-made elements which are harmful to man and to the environment.

Water: The principal activities deal with engineering ground water systems, sewage systems, water purification plants, and waste water treatment plants; studying the sources and effects of all water pollution; and developing new methods of cleaning polluted water and desalinating sea water.

Areas for investigation:

1. Sources and uses of water
2. Quality of water
3. Purpose of chemicals
4. Sedimentation
5. Filtration
6. Softening
7. Aeration
8. Storage and distribution
9. Recycling of water
10. Bacteriology
11. Equipment

Air, Noise, Radiation: The principal activities deal with studying the effects of radiation on man, animals, and plants; isolating dangerous quantities of radioactive waste from nuclear power plants; reducing the amount of pollution produced from the internal combustion engine or the burning of industrial fuels; investigating the effects of airborne fibers insulating buildings; and reducing the sound produced by mechanical devices.

Areas for investigation:

1. Sampling methods
2. Equipment
3. Analyzing data
4. Complaint investigations
5. Health hazards
6. Effective controls

Solid Wastes: The principal activities deal with planning and operating incinerators, land fills, and other disposal processes; regulating garbage pick-up and handling; inventing new biodegradable products for manufacturers; and aiding farmers in disposing of livestock waste.

Areas for investigation:

1. Landfill operations
2. Incinerator operations
3. Collection systems
4. Biodegradable products
5. Agricultural wastes

The following occupations were developed into Teaching Modules for this guide:

Environmental Inspector - Primary
Environmental Technician (noise) - Intermediate

The following occupations could be developed into Teaching Modules:

1. Estuarine oceanographer
2. Ground water hydrologist
3. Watershed foreman
4. Aquatic biologist
5. Water treatment plant superintendent
6. Water treatment plant chemist
7. Water treatment plant laboratory technician
8. Limnologist
9. Biochemist
10. Biophysicist
11. Microbiologist
12. Zoologist
13. Botanist
14. Analytical chemist
15. Inorganic chemist
16. Organic chemist
17. Civil engineer chemist
18. Waste water treatment plant superintendent
19. Operations supervisor
20. Waste water technician
21. Radiological health technician (monitor)
22. Radiological pollution control technician
23. Air pollution control director
24. Air pollution control engineer
25. Air pollution control meteorologist
26. Incinerator foreman
27. Incinerator operator
28. Combustion engineer
29. Air analyst
30. Climatologist
31. Power plant operator
32. Nuclear engineer
33. Industrial engineer
34. Sanitary engineer
35. Sanitarian
36. Refuse collector
37. Solid waste disposal operator

APPENDIX B

CAREER DEVELOPMENT CONCEPTS

DEVELOPMENTAL DIMENSIONS

The four components (Coping Behavior, Self-Development, Decision Making, Lifestyle) in which concepts can be sequenced in a logical progression for different experience levels.

INTERACTING DIMENSIONS

The five components of career development (attitudes and appreciations, career information, educational awareness, skill awareness, economic awareness) in which all concepts are appropriate for all experience levels.

Developed By
Enrichment of Teacher and
Counselor Competencies in
Career Education Project
Eastern Illinois University
Charleston, Illinois 61920

MAJOR CONCEPTS AND SUBCONCEPTS ORGANIZED BY DIMENSION

DEVELOPMENTAL DIMENSIONS

COPING BEHAVIORS

1. Major Concept

Certain identifiable attitudes, values, and behaviors enable one to obtain, hold, and advance in a career.

Readiness Level

An individual should learn to cope with authority exercised by others.

First Experience Level

An individual should learn to cope with the rights and feelings of others.

Second Experience Level

An individual should learn how to give and take criticism.

Third Experience Level

A contribution to group effort can be made by demonstrating ability to both compromise and exercise influence in achievement of group goals.

Fourth Experience Level

Certain behaviors are appropriate to specific job settings.

Fifth Experience Level

There is a universality of feelings and aspirations of all people regardless of physical appearance, nationality, creed, sex, or ethnic background.

Sixth Experience Level

There are effective interpersonal relations skills for giving or evaluating instructions.

2. Major Concept

Individuals can learn to perform adequately in a variety of occupations and occupational environments.

Readiness Level

Different skills are required for different tasks.

First Experience Level

Several skills may be required to perform a given task.

Second Experience Level

Some skills can be transferred from one job to another.

Third Experience Level

Performance requirements for a job will vary with the work setting of the job.

Fourth Experience Level

Performance requirements for a job may change with time.

Fifth Experience Level

It is important for a person to be able to make the transition from one job to another.

Sixth Experience Level

There are characteristics which differentiate between occupations--both within and between job families.

SELF DEVELOPMENT

1. Major Concept

An understanding and acceptance of self is important.

Readiness Level

Awareness of oneself within the context of the family structure is important.

First Experience Level

An individual experiences various roles--friend, student, group member, etc.

Second Experience Level

There are certain physical, social, and emotional characteristics which make an individual unique.

Third Experience Level

An individual's feelings relative to happiness, fear, anger, loneliness, etc., are diverse.

Fourth Experience Level

A person's membership in a group affects the group as well as himself.

Fifth Experience Level

Interests and abilities mature and change as well as one's physical being.

Sixth Experience Level

There is a relationship between an individual's knowledge and acceptance of self and his career preference.

2. Major Concept

Social, economic, educational, and cultural forces influence self-development.

Readiness Level

An individual is influenced by other people.

First Experience Level

The school can provide an opportunity to enhance self-development.

Second Experience Level

An individual's feelings and the feelings of others relate to commonly held beliefs and customs.

Third Experience Level

Groups outside of school influence an individual's personal development.

Fourth Experience Level

An individual is influenced by economic forces.

Fifth Experience Level

Changes in an individual influence his environment and changes in environment influence him.

Sixth Experience Level

An individual's values and personal goals are influenced by the values of other people.

3. Major Concept

Individuals differ in their interests, aptitudes, values, and achievements.

Readiness Level

An individual should be aware of the tasks that he performs and begin to determine his interests in these tasks.

First Experience Level

An individual's interests, aptitudes, values, and achievements are not always the same as those of his peers.

Second Experience Level

An individual has social, physical, and intellectual aptitudes for various tasks.

Third Experience Level

Individuals differ in their physical characteristics.

Fourth Experience Level

Achievements in school and out of school are often dependent upon interests, aptitudes, and values.

Fifth Experience Level

An individual can differentiate between himself and others in terms of interests, aptitudes, values, and achievements in and out of school.

Sixth Experience Level

There is a relationship among interests, aptitudes, achievements, values, and occupations.

DECISION MAKING

1. Major Concept

Life involves a series of choices leading to career commitments.

Readiness Level

Choice means "making up one's mind" and there are certain situations where one can make choices.

First Experience Level

Things change and these changes influence the choices and decisions one makes.

Second Experience Level

An individual's decisions affect himself and others.

Third Experience Level

People change and these changes influence the choices and decisions one makes.

Fourth Experience Level

Decision making involves risks.

Fifth Experience Level

Decision making can precipitate chain reactions.

Sixth Experience Level

Previous decisions, peers, gratifications, needs, interests, and career information influence present and future decisions.

2. Major Concept

Basic components of the decision-making process can be applied to the establishing of personal goals and the making of career-related decisions.

Readiness Level

An individual should recognize what "a goal" is and learn how to set one's own goals.

First Experience Level

Problems which conflict with one's goals can be identified and assessed.

Second Experience Level

An individual should consider alternative ways to reach a given goal.

Third Experience Level

Decision making plays a role in the setting of immediate and long-range goals.

Fourth Experience Level

The decision-making process can be used to set priorities in developing personal goals.

Fifth Experience Level

Setting goals can be enhanced by analyzing decision-making processes.

Sixth Experience Level

The decision-making process can be used to determine one's preferences, at that point in time, between various job families.

LIFESTYLE

1. Major Concept

Work affects an individual's way of life in that a person is a social being, an economic being, a family being, a leisure being, and a moral being.

Readiness Level

Most people work and there are many reasons why people work.

First Experience Level

Family members perform work they are capable of performing, responsibilities are shared, and the family is an interdependent unit.

Second Experience Level

Lifestyles within a community differ.

Third Experience Level

Relationships exist between a person's occupation and the people with whom a person tends to associate.

Fourth Experience Level

Moral principles are an integral part of one's work life.

Fifth Experience Level

Relationships exist between desired lifestyles and career monetary rewards.

Sixth Experience Level

Leisure-time activities and interests may lead to a career, and one's career may, in turn, effect the amount and use of leisure time.

INTERACTING DIMENSIONS

ATTITUDES AND APPRECIATIONS

1. Major Concept

Society is dependent upon the productive work of individuals.

Subconcepts

Completion of a worthwhile task has value for the worker and for society.

Work involves the acceptance of responsibility for a task.

A great many tasks can be performed by men or women.

Most occupations include common expectations, such as punctuality, dependability, and avoidance of excessive absence.

A given work setting requires certain policies and procedures.

Specialized occupations result in an interdependent society.

CAREER INFORMATION

1. Major Concept

Basic career information will aid in making career-related decisions.

Subconcepts

Occupations may have certain dress requirements.

Occupations require the use of specific materials and equipment.

Occupations have their own vocabularies.

The individual worker determines which aspects of an occupation may be unpleasant or pleasant.

Occupations have their own work settings.

Occupations require special personal characteristics.

Earnings vary with occupations.

Career development includes progression through stages of educational and occupational training.

Costs of training for occupations vary.

Technological, economic, social, and political factors influence supply and demand of jobs.

EDUCATIONAL AWARENESS

1. Major Concept

Educational skills and experiences are related to the achievement of career goals.

Subconcepts

Skills and knowledges in subject areas are helpful in occupational competence.

Career-oriented learning may take place in or out of school.

Learning is a lifelong process.

Learning achievement depends upon effort and ability.

APPENDIX C

GRADE LEVEL ARTICULATION:

SUBJECT MATTER CONCEPTS

MODULES DEVELOPED

KINDERGARTEN SUBJECT MATTER

MATHEMATICS

- Estimates
- Containers for measuring
- Weights
- Counting
- Bar and picture graphs

LANGUAGE ARTS

- Labels
- Role playing
- Creative writing
- Directions
- Senses
- Critical thinking

SCIENCE

- Pollution
- Observations
- Pets
- Day and night animals
- Noise
- Inventions
- Cooking
- Plants
- Environment

SOCIAL STUDIES

- Geography
- Rules
- Care of equipment
- Family life
- Field trips
- Manners
- Individuality and responsibility
- Concern for environment

MODULES DEVELOPED

- Peanut Butter Maker
- Environmental Inspector

GRADE 1 SUBJECT MATTER

MATHEMATICS

Grouping
Estimating
Counting
Penny, Nickel, Dime
Measuring
Length in feet
Pint, quart, bushel
Keep and interpret tallies

LANGUAGE ARTS

Sentences - Who, What, When
Role playing
Interviewing
Cause - effect, sequence
Experience charts

SCIENCE

Weather
Scientific observations
Thermometer, clouds, rain sunshine, wind
Senses
Plant growth
Conservation of resources
Classification and identification of animals
Classification and identification of plants

SOCIAL STUDIES

Rules
Life styles
Comparisons of job functions of workers
Things we need
Map pictoral symbols

MODULES DEVELOPED

Agronomist
Park Ranger Naturalist

GRADE 2 SUBJECT MATTER

MATHEMATICS

Liquid measurement
Calendar
Half hour
Coins
Time
Comparisons
Dozen, half-dozen
Yard, mile, ½ inch
Lines
Maps, charts, bar graphs
Dry measure

LANGUAGE ARTS

Reading
Table of contents
Reading for information
Reading printed directions
Listing
Letter writing -- placing orders
Role playing
Listening
Tone and mood
Interviewing
Story telling
Story writing

SCIENCE

Scientific observation and instruments
Earth depends on sun for heat and light
Needs for food and water
Pollution
Measuring
Seasons
Living things change
Life cycles
Identification of plants
Classification
Reproduction
Insects

SOCIAL STUDIES

Natural resources
Special purpose maps
Comparisons of job functions of workers
Neighborhoods
Community workers
Dependence of one job on another
Transportation

MODULES DEVELOPED

Florist
Truck Farmer

GRADE 3 SUBJECT MATTER

MATHEMATICS

- Multiplication
- ½, ¼, 1/3, 1/5, 1/10
- Two-place quotients
- Comparison
- Time
- Measurements
- Gallon, half gallon, quart, pint
- Areas and perimeters
- Line graphs
- Buying and selling

LANGUAGE ARTS

- Dictionary
- Alphabetical order
- Creative writing
- Finding information, library skills
- Role playing
- Interviewing
- Occupational vocabulary building
- Research
- Letters
- Giving and taking directions
- Pronunciation key

SCIENCE

- Rotation of earth - night, day seasons
- Time measured by earth, moon and sun movements
- Change of earth's surface
- Relief maps
- Gathering data
- Classification
- Simple machines
- Different environments support different forms of life
- Living things depend and adapt to environment
- Man can control the environment of living things
- Living things reproduce and are made up of cells which need food, air, and waste disposal

SOCIAL STUDIES

- Scale of miles
- Intermediate directions of compass
- History - agricultural
- Economics
- Interaction between people and environment influences ways that needs are met
- Dependence of city on agriculture

MODULES DEVELOPED

- Forestry Technician
- Farm Equipment Mechanic

GRADE 4 SUBJECT MATTER

MATHEMATICS

- Averages
- Billions
- Area of Rectangle and square
- Dry measures - Bu., pk., qt.,
- Money- earning, saving, spending
- Fractions
- Perimeter
- Diameter and radius of a circle
- Length- rod, fathom
- Map scales

LANGUAGE ARTS

- Play writing
- Euphemisms
- Almanacs, atlases, encyclopedias
- Creative writing- slogans
- Sequence
- Letter writing
- Origin of words
- Interviewing
- Card Catalog
- Discussions
- Pitch, tone, volume

SCIENCE

- Identification skills
- Green-plant food manufacture
- Heating and cooling affect on materials
- Planting
- Sound waves, pitch, frequency, and acoustics
- Soil conservation
- Chemical reactions
- Comparisions by measurements
- Man's ability to change his habitat
- Classification

SOCIAL STUDIES

- Local state geography
- Using resources
- Rules for interaction
- Latitude and longitude
- Economics
- Interpretation of data (surveys)
- Regional areas - Hot-dry, Hot-wet, etc.
- Sharing resources
- Physical environmental influences
- Graphs (circle, line, picto., bar)
- Group influence

MODULES DEVELOPED

- Christmas Tree Farmer
- Enviromental Technician (noise)

GRADE 5 SUBJECT MATTER

MATHEMATICS

- Fractions
- Decimals
- Ratio and comparison
- Angles
- Circle graphs
- Comparing graphs
- Graphing
- Graphing number pairs
- Computing input and output
- Liquid measure to teaspoon
- Weights - grams, ounces, pounds, tons
- Keeping accounts
- Estimating outcomes
- Scale drawings
- Table of data
- Land measurement
- Cost comparison
- Stock market prices

LANGUAGE ARTS

- Occupational vocabularies
- Scientific and technical vocabularies
- Letter writing
- Making inferences
- Pantomime
- Interviewing
- Reading
- Research
- Note taking
- Cross referencing
- Report writing
- Writing descriptions
- Roles with dialogue
- Listening

SCIENCE

- Effects of sun and water on growth
- Prevailing winds
- Weather forecasting
- Plant growth
- Erosion
- Soil conservation
- Photosynthesis
- Reproduction
- Diseases
- Nutrition
- Vectors
- Machines
- Steam and gasoline engines
- Scientists: make discoveries, test hypotheses, draw conclusions, make new experiments
- Interpretation of data
- Genetics
- Chemical changes
- Insecticides

SOCIAL STUDIES

- Climate zones
- U. S. geographic regions
- Group interactions and inherited cultures influence ways of living
- Economics
- Geography
- United States History
- Production of livestock map
- Pictomap

MODULES DEVELOPED

- Irrigation Engineer
- Livestock Producer
- Greenskeeper

GRADE 6 SUBJECT MATTER

MATHEMATICS

Decimal fractions
Mixed fractions
Volume cubic inch, cubic foot, cubic yard
Negative numbers
Calculating cost
Estimating
Bar and line graphs
Percent on bar and circle graphs
Frequency charts related to graphs
Percents
Collection of data
Pertinent and unrelated data

LANGUAGE ARTS

Research
Brainstorming
Vocabulary building
Scientific and technical language
Report writing from research
Outlining
Creative writing
Role playing
Telephone - business use
Interviewing
Simulated introduction/interview of famous person
Argumentation, debate
Oral reports
Note taking
Before and after descriptions
Comparison and contrast
Sales techniques

SCIENCE

Gathering data
Temperature
Forces affecting changes in earth
Standard measurements - English and metric
New fields of investigation
Interpretation of data
Food chains
Sense of taste
Concepts related to bacteria and molds
Genetic code
Dependence of all life on photosynthesis
Dissection techniques
Research in continued and controlled experimentation
Animal nutrition

SOCIAL STUDIES

Conflicts among values, traditions, and institutions produce change
Voting
Individuals in groups cooperate and depend on each other
Cooperation is developed and controlled in various ways - government
European History (ancient, medievial, modern)
United National (agribusiness organizations, government programs
Drawing of maps
Map index, flow charts
Community's role in conservation

MODULES DEVELOPED

Feed Sales Personnel
Dairy Processing Equipment Operator (Cheese)
Fish Culturist

APPENDIX D

SUGGESTIONS FOR THE ARTICULATION OF A CAREER AWARENESS PROGRAM IN THE AREAS OF AGRIBUSINESS, RENEWABLE NATURAL RESOURCES, AND ENVIRONMENTAL PROTECTION

D-2

SUGGESTIONS FOR THE ARTICULATION OF A CAREER AWARENESS PROGRAM IN THE

AREAS	K	1	2
AGRICULTURAL PRODUCTION	Cattle & sheep rancher Cotton farmer Peanut farmer	Poultry farmer Seed grower	*Truck farmer Swine farmer
AGRICULTURAL SUPPLIES AND SERVICES	Veterinarian	*Agronomist Seed salesman	Agricultural teacher
AGRICULTURAL EQUIPMENT AND MECHANICS	Fiber equipment operator	Farm equipment operator	Tool salesman Farm building specialist
AGRICULTURAL PRODUCTS (FOOD PROCESSING)	*Peanut butter maker Blancher operator	Poultry dresser Egg processor Egg grader	Foreman, cured-meat packing plant Meat inspector Cannery worker
ORNAMENTAL HORTICULTURE	Landscape gardener Nursery grower	Tree sprayer Tree expert Park foreman	*Retail florist Flower grower Floral designer
RENEWABLE NATURAL RESOURCES	Animal keeper Recreation farm manager Game farm worker	*Park ranger naturalist Natural history curator Refuge manager Aviary manager	Conservation aide Roadside development engineer
FORESTRY	Forest fireman Chipper operator	Conservation aide technician Lumber grader Wildlife technician	Logging equipment operator Woods foreman Skidway man
ENVIRONMENTAL PROTECTION	*Environmental inspector Range conservationist	Climatologist	Sanitary engineer Air analyst technician Water treatment plant superintendent

*Denotes sample learning module

AREAS OF AGRIBUSINESS, RENEWABLE NATURAL RESOURCES, AND ENVIRONMENTAL PROTECTION

3	4	5	6
Bee keeper Fruit grower	Horse breeder Tobacco farmer Farm manager	*Livestock producer Grain or forage producer Grain elevator manager	Dairy farmer Sugar farmer Agricultural cooperative manager
Entomologist Plant geneticist	Feed mixer Seed mill foreman Animal geneticist Auctioneer	Feed company farm advisor Fertilizer formulation specialist Seed analyst Agricultural chemical product serviceman Agricultural chemist	*Feed salesman Fertilizer inspector Seed grader Aerial spray operator County extension agent
*Farm equipment mechanic Product handling equipment salesman	Inspector & tester of agricultural equipment Agricultural structure designing engineer Rural cooperative utilities salesman	*Irrigation engineer Agricultural equipment parts man Farm building components salesman	Agricultural machinery salesman Soil biologist Soil test analyzer technician Rural electrician Rural carpenter
Sorter	Grader	Meat grader Slaughterer USDA inspector Gelatin plant foreman	*Dairy processing equipment operator (cheese) Milk sampler Butter maker Ice cream maker Dairy technologist Sugar refining foreman
Green house manager Nursery worker Nursery sales agent	Arboriculturist Tree climber Tree surgeon Pest control specialist	*Greenskeeper Turf production manager Sod layer Cemetary grounds keeper	Landscape architect Park grounds technician
Soil conservationist aide Aquaculture technician	Forest ecologist Hunting & fishing guide Line bait dealer	Range conservationist Wildlife research technician Soil scientist	*Fish culturist Forest geneologist Forest recreation technician Laboratory technician (ocean fishing) Fish management specialist Fish farmer
*Forest technician Logger Gum gatherer	*Christmas tree farmer Greenspicker	Pulp wood buyer Tropical forest research director Forest ranger	Forest surveyor Timber stand improvement foreman Sawmill operator Sugar tapper Wildlife technician
Oceanographer Refuse collector Marine quality control technician	*Noise pollution control technician Watershed manager	Water systems foreman Sanitarian Soil conservationist Meteorologist	Estuarine oceanographer Solid waste disposal operator Marine pollution control technician Health physicist Aquatic biologist

D-4

PILOT TESTING SCHOOLS

ELEMENTARY K-6

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Apollo School, Aledo, Illinois
Aroma Park School, Kankakee, Illinois
Broadmeadow School, Rantoul, Illinois
Buzzard Laboratory School, Charleston, Illinois
Catlin Elementary School, Catlin, Illinois
Cumberland Elementary and Junior High School, Greenup, Illinois
Edison School, Mt. Vernon, Illinois
Elmwood School, Danville, Illinois
Garfield School, Danville, Illinois
Grace Nicholson School, Montgomery, Illinois
Hickory Hill School, Park Forest, Illinois
Holmes Elementary Schools, Wilder, Idaho
Lincoln School, Highland Park, Illinois
Logan School, Moline, Illinois
Lowe Elementary School, Sullivan, Illinois
Monroe School, Casey, Illinois
Parma Elementary School, Parma, Idaho
Pleasant Acres School, Rantoul, Illinois
Powers Elementary School, Sullivan, Illinois
Roach School, Decatur, Illinois
Roosevelt School, Casey, Illinois
Rosewood Elementary School, Alton, Illinois
Saukview School, South Chicago Heights, Illinois
Sunset Hills School, Pekin, Illinois
Wanless Elementary School, Springfield, Illinois
Washington School, Danville, Illinois

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